Rising Together: Community Resilience and Public Libraries

Beth Joy Patin

A dissertation

submitted in partial fulfillment of the

requirements for the degree of

Doctor of Philosophy

University of Washington

2020

Reading Committee:

Allyson Carlyle, Chair

Michael Eisenberg

Karine Nahon

Program Authorized to Offer Degree:

The Information School

University of Washington

Abstract

Rising Together: Community Resilience and Public Libraries

Beth Joy Patin

Chair of the Supervisory Committee:
Dr. Allyson Carlyle, Professor
The Information School

Hurricane Katrina, the Joplin Tornadoes, the Oso Mudslide, and even more recently, Hurricane Maria all demonstrated the devastating experience of disaster. While each of these extreme events varies in scope, size, and degree of disruption, each overwhelmed local authorities necessitating state and federal assistance. Prevention of disasters is ideal, but not practical. Instead, the emphasis is placed on resilience or a community's ability to bounce back.

This dissertation explored the phenomenon of community resilience and how public libraries, as FEMA-designated essential community organizations, enhanced community resilience. These phenomena were studied by answering the following research questions:

1. What actions have public libraries taken during and after extreme events to support their communities?

2. What services have public libraries provided to their communities during and after extreme events?
3. What roles have public libraries played in their communities during and after extreme events?
4. How do public library directors/managers think public libraries enhance community resilience and build adaptive capacities?
5. How do disaster responders think public libraries enhance community resilience and build adaptive capacities?

Through a multi-method qualitative approach, this work utilized content analysis and interviews to determine the actions, roles, and services public libraries provided throughout disasters, as well as how public libraries enhanced community resilience. First, I performed a content analysis on the Disaster Information Management Research Center database, which is composed of items identified by the U.S. Department of Health and Human Services' National Library of Medicine. The content analysis focuses on:

- The actions public libraries have taken throughout disasters;
- The services libraries have demonstrated previously throughout disaster;
- The roles public libraries play throughout disasters.

For the second phase of the research, I conducted interviews with participants to understand how libraries might enhance community resilience. The participants in this study included a purposefully selected group consisting of six to ten public library directors and six to ten disaster response agents working in declared FEMA disaster zones from 2005-2018. Participants were selected as a purposive sample to identify the broadest diversity of library actions, services, and roles across disaster experiences. This work bridges the gap between research and practice by

being the first qualitative study in community resilience, investigating the role of public libraries across multiple disaster types and settings. The results of this project identified the adaptive capacities public libraries exhibit to enhance community resilience.

TABLE OF CONTENTS

List of Figures v

List of Tables vi

Chapter 1. INTRODUCTION 10

1.1 Introduction 10

1.2 Background and Context 12

1.3 Problem Statement 14

1.4 Purpose and Research Questions 15

1.5 Theoretical Approach 15

1.6 Research Plan 16

1.7 Limitations 17

1.8 Organization of the Dissertation 20

1.9 Conclusion 20

Chapter 2. Background and Literature Review 22

2.1 Introduction 22

2.2 Background 22

2.2.1 Disaster Classification 22

2.2.2 Emergency Management and public libraries in the United States 26

2.3 Literature Review 27

Chapter 3. Conceptual Framework 35

3.1 Introduction 35
3.2 Theoretical Approaches to Resilience 35
3.3 Community Resilience Theory 37
3.4 The Four Adaptive Capacities of Community Resilience 39
3.4.1 Economic Development 39
3.4.2 Social Capital 41
3.4.3 Information and Communication 42
3.4.4 Community Competence 43
3.5 Community Resilience in Previous Research 43
3.6 Application of the Theory 45
Chapter 4. Methodology 47
4.1 Introduction and Research Questions 47
4.2 The rationale for Research Design 47
4.3 Content Analysis Pilot Study 48
4.3.1 Content Analysis Pilot Study Method 48
4.3.2 Content Analysis Pilot Study Research Sample 50
4.3.3 Content Analysis Pilot Study Findings 51
4.4 Content Analysis 52
4.5 Interview Pilot Study 53
4.5.1 Interview Pilot Study Methods 53
4.5.2 Interview Pilot Study Participants 53
4.5.3 Interview Pilot Study Findings 55
4.6 Interviews 55

4.7 Issues of Trustworthiness 56
4.8 Ethical Considerations 58
4.9 Limitations of the Study 60
Chapter 5. Data Collection and Findings 61
5.1 Introduction 61
5.2 Phase 1: Content Analysis 62
5.2.1 Data Collection 62
5.2.2 Findings 63
5.3 Phase 2: Interviews 73
5.3.1 Data Collection 73
5.4 Research Question 4: Library Directors and Community Resilience 74
5.4.1 Economic Development 74
5.4.2 Social Capital 75
5.4.3 Information and Communication 78
5.4.4 Community Competence 82
5.5 Research Question 5: Disaster Response Agents and Community Resilience 85
5.6 CONCLUSION 87
Chapter 6. Discussion and Future Directions 88
6.1 Findings Highlights 88
6.2 Discussion of the Findings 89
6.3 Suggestions for Future Directions 92
6.3.1 Future Directions: Theoretical 92

6.3.2 Future Directions: Practical 93

6.3.3 Future Directions: Empirical 94

6.4 Conclusion 94

Bibliography 96

APPENDIX A: Coding Scheme 106

APPENDIX B: Content Analysis Items 111

APPENDIX C: participant recruitment materials 117

APPENDIX D: Participant Consent 118

Appendix E: Interview Guide 120

LIST OF FIGURES

Figure 2.1. Disaster Impact Zones (Dynes 1970) . .....**Error! Bookmark not defined.**4
Figure 3.1 Community Resilience as a Set of Networked Adaptive Capacity……...39
Figure 6.1 Word Cloud Results from Coding…….63

LIST OF TABLES

Table 2.1. FEMA Disaster Types 22
Table 4.1 Summary of Content Analysis ……..54
Table 5.1 Disaster-related Library Services after Disaster……67
Table 5.2 Roles Public Libraries Played after Disaster…….69

ACKNOWLEDGEMENTS

So many people need to be thanked, and I know that I will miss folks, but I am going to do my best. Thank you to everyone who had pushed me, talked with me, listened to me, held my hand when I needed it, read drafts, helped me refine my ideas, feed me, went out dancing with me, and supported me in every other way.

First, I need to thank the members of my committee: Allyson Carlyle, Mike Eisenberg, Karine Nahon, and Kathleen Fearn-Banks. Without you, none of this would have been possible. Allyson, you never gave up on me and took me in when I lost Eliza. I could never repay all of the wisdom you have shared with me or all the encouragement you have given. Mike, you were my cheerleader from day one. I see myself in you and your work. You are a wonderful mentor, and I am lucky to have you on my side. You saw my path even when I could not.

My time at the University of Washington was supported by two different sources: the Washington Doctoral Initiative and the Nancy Gershenfeld Fellowship. Thank you to Allyson Carlyle for having the foresight to write a grant seeking to increase diverse professors in our field and to all of the mentors that helped us along the way. And special thanks to Nancy Gershenfeld for starting a fellowship to support graduate students in their first year.

To my cohort, peers, and colleagues: there are too many of you to name. Each of you changed me in your ways. You helped me sharpen my mind, ask the right questions, and pursue knowledge. Particular shout out to the Three Bears, Sand Point Grill and our dearest bartender, and the fine gentlemen of Kentucky that provided our favorite beverage. I also need to say special thanks to Nicole Cooke, Amelia Gibson, Sarah Park Dahlen, Tonia Sutherland, and Renate Chancellor for mentoring me fiercely and leading the way in our field. Indeed, I am standing on the shoulder of giants.

If you know me, you know I have so many friends. I love people quickly and do not like to let them go. My friends have supported me through this journey. From encouraging me to apply to helping me celebrate my victories. For all of the laughs, cries, food, drinks, dancing, music, football, I could never put into perspective what those things mean to me. Special thanks to Lisa and Ashley Williams. Y'all swooped in and gave me a West Coast family when I was picking up the pieces and needed it the most. As I have told you both before, you will never shake me. In a minute I'll be free; and we'll be splashing in the sea. I am forever grateful that we are friends that grew into family.

My family is the greatest and cannot be outdone. From the beginning, they taught me about perseverance, resilience, fighting for justice, and working on my education. I loved books and learning from the beginning, but I'm not sure any of them thought I would take it this far. They also taught me how to be adventurous, tell jokes, and have a good time. Dad, thank you for being a role model and helping guide me to know what to stand up for, how to advocate for myself, and how to understand what is just. Come writers and critics, who prophesize with your pen; And keep your eyes wide, the chance won't come again. I have wonderful grandparents who supported me through my education and provided the most opportunities for me; thank you Grandma, Papa Don, and Grandmother. Mom and Dave, you all have supported me throughout my many misadventures, moments of insecurity, moments of exquisite joy, and profound sadness. You have taught me everything I need to know about unconditional love, choosing joy, and showering the people you love with love. Thank you for everything, even all the stars and the trees. Catherine, you are the best person I know. You are full of love and light, and I am better because I have you for a sister. You call me out on my bullshit and make me want to be a great person. You have been there for me in my darkest times and danced with me in the light. Thank you for being my ladder and helping me climb to safety; you will never be alone. Maren, you are the most dope nephew a gal could have, and your hair is so fluffy. Thank you for loving me unconditionally and teaching me how to play the bass. Brian, you came into my life and loved me fiercely. If life is a movie, oh, you're the best part. Thank you for teaching me what partnership means.

DEDICATION

Since I have started the Ph.D. program, I lost four phenomenal women who all shaped me into the person I am today. Without each of them, I would be in a different place and a different person. These women encouraged me to take risks, live life without regrets, go on adventures, think clearly, speak loudly, and to be comfortable in the space I occupy. This dissertation is dedicated to these four women and all of the lessons they taught me.

- **Janet Armstrong**
- **Eliza Dresang**
- **Ally Krebs**
- **Annie Rues Neidel**

Chapter 1. INTRODUCTION

"Disasters are, most basically, terrible, tragic, grievous, and no matter what positive side effects and possibilities they produce, they are not to be desired. But by the same measure, those side effects should not be ignored because they arise amid devastation. The desires and possibilities awakened are so powerful they shine even from wreckage, carnage, and ashes. What happens here is relevant elsewhere."

Rebecca Solnit in A Paradise Built in Hell (2009, p. 34)

1.1 INTRODUCTION

After teaching in the New Orleans Public School system for several years, I earned a Master of Library and Information Science from Louisiana State University. I was subsequently hired in the Summer of 2005 as the head librarian at a 125-year-old boys' school nestled on the banks of the Mississippi River. Life presented fantastic opportunities; what could go wrong?

On the morning of August 23, 2005, Tropical Depression Twelve formed over the southeastern Bahamas and would eventually become the most destructive hurricane in United States history (Knabb et al. 2005). The predictions for Hurricane Katrina agreed the storm would hit Florida, so I had no way of knowing, when I walked out of my library on a Friday afternoon, that it would be more than two months before I would see it again. By the time I awakened on Saturday morning, a call to evacuate all of South Louisiana had been issued. I quickly tried to think about my most important possessions, grabbed my dog, packed up, and left. I headed to Baton Rouge, thinking I would have to work on Monday morning, so I did not want to travel too far.

That Monday morning, August 29, 2005, Hurricane Katrina hit New Orleans, and our levees failed. For the next couple of days, I watched the news in disbelief and saw pictures and videos of my friends, co-workers, and neighbors fight to get out of New Orleans. For the next two

months, I found myself homeless, jobless, and displaced; I did not know when the city would reopen. It is hard to imagine oneself standing in Red Cross lines for necessities or getting food from the Salvation Army, but that was my reality. For me, there was no doubt that when New Orleans reopened, I would be there. The morning that residents could return, I was in that number.

Nothing could have prepared me for what remained of my city. There were boats on houses and houses on boats. Cars were in trees, and trees were on cars. Debris was everywhere. No matter where you drove, you could see the dark, oily line demarcating the point where the water had risen. Oh, and there was a smell. The smell of death and decay permeated everywhere; it became such a part of my daily life that I do not even remember when it finally went away. There were moments when I was not sure if I could handle it all. Would it not be easier to go somewhere else and start over? I doubted whether I had the strength to rebuild my home, my city, and my life, piece by piece. I resolved to do one thing: save something, anything.

When I headed to the Lower Ninth Ward, the first things I saw were the breach in the Intracoastal Canal and a barge sitting in the middle of what had been a street of colorful houses. As I turned off the bridge, the National Guard stopped me. The Lower Ninth Ward was still closed to residents and was not safe; we were under "look and leave orders." Look and leave orders to allow residents in a specific area to look at their properties and assess the damage. Still, they were required to go each day by 6:00 p.m. As I drove up to the campus after getting clearance from the National Guard, I could see the magnificent oak trees that have watched over Holy Cross for over a hundred years, and the devastation took my breath away.

The gym was demolished, and there was a water line above the windows on the first floors of the buildings on campus. All of the cafeteria tables were covered with mud and sludge and were strewn in every direction. Offices and classrooms were filled with dirt, garbage, dead animals, and

fish. Lockers were rusty and moldy, and the disgusting black line went halfway up the second flight of stairs. When I saw the library, my heart skipped a beat. There were broken windows, roof tiles, and so much debris. I knew it was going to be a long time before the library would be ready for students again.

This experience had a profound effect on me and resulted in my path to a doctorate in information science. These questions have guided my doctoral study and are the overarching questions this dissertation aims to answer: How do we, as librarians, serve our communities when they need us most? What roles might libraries play in helping our community return to normal after a disaster?

1.2 Background and Context

Our nation has experienced many disasters and will continue to do so. Many recent disasters demonstrate the overwhelming character of these extreme events:

- 9/11 (2001),
- Hurricane Katrina (2005),
- The Deepwater Horizon explosion and oil spill in the Gulf of Mexico (2010),
- The 4/27 Tornadoes in the State of Alabama (2011),
- The Oso Mudslide in Washington State (2014), and, even more recently,
- Hurricanes Harvey, Irma, and Maria (2017)

While these extreme events varied in scope, size, and degree of disruption, each overwhelmed local authorities, necessitating state and federal assistance. Prevention of disasters is ideal, but not practical. A practical approach includes both preparedness and resilience. Preparedness works towards readying a community for a disaster, whereas resilience considers one's ability to bounce back after something has happened. For example, we can do nothing to prevent tornadoes from

occurring. Instead, we must focus our attention on how to be ready in case they occur and how to stabilize our communities before and after such events. Resilience expands traditional preparedness and prevention programs by also encouraging actions that build a community's ability to return to normal after a disaster.

Resilience is echoed in our national policies. Our national preparedness agenda seeks to create more resilient communities (Dept. of Homeland Security 2008; Obama 2011; White House 2010). In 2009, President Obama formally established the Office of Resilience within the National Security Council in the White House with a clear goal: if communities can increase their resilience, then they are in a much better position to withstand adversity and to recover quickly (Obama 2009). Unfortunately, the Office of Resilience incorporated the concept of resilience into the national preparedness agenda and policies without defining it or indicating how to measure it (Cutter 2008). In 2010, FEMA called for specific organizations to build core capabilities to confront disasters and to measure and track how communities can collaborate to respond better and rebuild after they occur. These essential community organizations, as they are designated by FEMA, are organizations whose services are "necessary to save lives, or to protect and preserve property or public health and safety" (FEMA 2010, p. 1). For the first time, FEMA formally designated public libraries (Stafford Act 2011) as essential community organizations, adding libraries to the category of essential community services, including police, fire protection/emergency services, medical care, education, and utilities.

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) was first issued in 1988. It was established to provide states and local governments with assistance in case of disasters. It has continued to be amended and defines the role of the federal government in disaster events. This Stafford Act designation establishes the level of involvement public libraries

can be expected to have throughout disasters. However, there is a lack of clarity about precisely how these essential community organizations are to help communities. Substantive and rigorous research is needed to identify how community organizations might add to resilience. Without a clear understanding of what it means to be resilient, supported by research findings, local organizations have no reliable guidelines for how they can enhance community resilience. These evolving roles make public libraries a crucial focus for research.

Public libraries have served community information and communication needs for decades (Bishop et al. 2011; Bertot 2012) and have important roles to play in disasters. Ninety-eight percent of U.S. counties and parishes contain at least one library, with an average of five per county or parish, making 17,487 public libraries across the country (Public Library Association 2015). These statistics demonstrate that public libraries are a ubiquitous part of the U.S. public infrastructure. Besides, they are often centrally located within their communities. (Buschman & Leckie, 2007; Oldenberg, 2001). Their placement within the community and their provision of information and communication services make them institutions that are clearly poised to be an essential component of disaster response.

1.3 Problem Statement

Both policy and research demonstrate the critical roles of information and communication play in community resilience. Empirical and anecdotal evidence shows the vital roles that public libraries play during disasters. However, no studies have explicitly looked at the roles libraries can play, actions libraries can take, and services public libraries can provide to enhance community resilience across multiple disaster types.

1.4 Purpose and Research Questions

The purpose of this research was to explore the phenomenon of community resilience within the context of public libraries and how they, as FEMA-designated essential community organizations, might enhance community resilience. It bridges the gap between research and practice by being the first qualitative study in this area to investigate the role of libraries across multiple types of disasters with a focus on community resilience. Specifically, this research identified, defined, and clarified the roles played by public libraries across different types of natural disasters. This gives us a broader understanding of what helps communities bounce back after disasters and how libraries can contribute to community resilience.

To perform this research, I employed a multi-method qualitative approach to investigate the roles libraries have played after disasters. First, I conducted a content analysis of the Disaster Information Management Research Center collection, looking for the roles of libraries that have played, services libraries provided, and actions libraries took during disasters. Next, I conducted interviews with library directors and others engaged with emergency response to shed light on how libraries might enhance resilience.

The following research questions are addressed:

- What actions have public libraries taken during and after extreme events to support their communities?
- What services have public libraries provided to their communities during and after extreme events?
- What roles have public libraries played in their communities during and after extreme events?
- How do public library directors/managers think public libraries enhance community resilience and build adaptive capacities?
- How do disaster responders think public libraries enhance community resilience and build adaptive capacities?

1.5 Theoretical Approach

The theoretical approach used to frame this research is based on Norris et al.'s (2008) theory of community resilience. In their framework, Norris et al. define communities' resilience as a

measure of how well communities adapt after a disaster event. They argue that resilience requires a conscious effort and must be maintained over time. Rather than considering resilience as only as an outcome (Paton and Johnston 2006), resilience is framed as an ongoing process. This reconsideration treats community resilience more in terms of continual learning to improve the community's capacity to handle disruptions rather than merely an outcome to be measured.

1.6 Research Plan

For this research, I employed a qualitative multi-method approach to illustrate how public libraries can enhance community resilience. First, I performed a content analysis on the Disaster Information Management Research Center database, which is composed of items identified by the U.S. Department of Health and Human Services' National Library of Medicine. This database contains a collection of published literature, both research-based and anecdotal, on the roles of librarians and information professionals in "the provision of disaster-related information" (NLM 2016). For this project, twenty-five percent of the items in the collection were sampled and coded using the community resilience theory as an initial framework (See Appendix A: Rising Together Coding Schema). The initial coding scheme was deduced from the concepts of the community resilience framework (Norris et al. 2008). It was open in that new codes were allowed to emerge inductively from the corpus. The coding continued until saturation was reached. The content analysis focused on:

- The actions public libraries have taken throughout disasters;
- The services libraries have demonstrated previously throughout disaster;
- The roles public libraries play throughout disasters.

For the second phase of the research, I conducted interviews with participants to understand how libraries might enhance community resilience. The participants in this study included a

purposefully selected group consisting of seven public library directors and six disaster response agents (FEMA representatives, City/County Response Planners, etc.) working in declared FEMA disaster zones from 2005-2018. Participants were selected as a purposive sample to identify the broadest diversity of library actions, services, and roles across disaster experiences. Selection criteria included library size, disaster type, and library type (urban, suburban, or rural). The interview data were recorded, transcribed, and analyzed using an open coding scheme based on the community resilience theoretical framework (See Appendix A: Rising Together Coding Schema).

1.7 LIMITATIONS

Previous research identified a wide array of services public libraries have delivered following disasters (Jaeger et al. 2005; Veil & Bishop 2012). A body of anecdotal evidence exists as well (Disaster Information Management Research Center 2016). However, the discussion of libraries as essential community resources in disaster recovery has remained segregated in the library literature, and libraries continue to be excluded from the main body of literature in the disaster sociology field. Another limitation of the existing research is that it examines the roles of libraries in disasters through case studies, which focus on one type of disaster rather than investigating the roles libraries play across different types of disasters. Further, FEMA has yet to identify the specific roles they expect libraries to play since their recent designation as essential community resources.

While this work is an excellent start to understanding how public libraries influence community resilience, it has several limitations. The nature and scope of this work are limited to studying community resilience from a public library perspective and will not be able to consider other types of libraries, such as school or academic libraries. Another limitation involves the

selection of the literature used to inform this research. Selecting literature for the content analysis from the fields of library and information science, crisis informatics, and disaster management should provide ample background and context for this work. However, there may be other resources outside of these fields that might inform this work. For example, limiting the content analysis to items in the Disaster Information Management Research Center corpus will provide a highly curated list of articles with high relevance to public libraries and disasters but potentially will not include all relevant details.

This research is qualitative, and as such, no attempt is made to provide evidence about how all libraries operate in disaster events. Instead, this work allows selected librarians and others to tell their stories. Therefore, this research focused on understanding the actions, roles, and services of specific libraries and was not generalizable to a broader sample.

Disaster research and literature note the difficulty some research participants have with admitting mistakes concerning disaster management after response. To help mitigate this issue, I frame questions avoiding placement of blame while still allowing space to acknowledge a need for improvement. These protocols for the creation of interview questions helped participants speak more candidly about their experiences.

The nested effect of libraries is challenging to capture in research. Public libraries are organized differently in different states. They can be part of city or county governments, or they can be arranged independently. The diversity of the organization of public libraries across the U.S. makes comparisons across public libraries in different states complicated. Further, relying on the library branch managers/directors to respond to interview questions might mean potentially missing other people in the libraries who might know more about the roles during disaster response.

Significance and Contributions

This work is significant because it sheds light on the roles of public libraries during disasters and the roles public libraries can play to support communities and adding to community resilience. Communities will always have to face disaster events. With a growing reliance on information technology, we become more at risk if we do not have access to technologies or the information we need to make critical decisions. Understanding how public libraries provided services during previous disasters helps illuminate the roles they should prepare for in new disaster events. This research is also significant as it is the first qualitative study to look at how libraries add to community resilience by investigating the roles of libraries across disaster types, rather than focusing on a kind of disaster, such as tornadoes.

This research identified previous actions public libraries have taken, services they have provided, and the roles they played after a disaster event. It helps us understand how library directors and emergency managers see public libraries as helping to make their communities more resilient and pinpoints the roles and characteristics of community resilience to be studied in future work. For example, a list of library roles and services during disaster events could be used as a starting point for quantitative research, such as a survey of public libraries looking at how they are currently responding to disaster events.

The results of this research contribute to knowledge by identifying public library capacities that have the potential to enhance a community's ability to bounce after disasters, to help make their community more resilient. Finally, this work looks at the actions and services that public libraries have exhibited in communities that have experienced disasters from 2005-2015. These specific contributions of the project can provide critical information for emergency responders and

communities to use in their decision-making processes on how to use libraries to support community resilience.

This work contributes to information behavior, library science, and disaster sociology by merging knowledge from all three fields. By including participants from both the LIS and emergency response field, the results of the data will be useful in all three academic areas.

1.8 Organization of the Dissertation

This dissertation is organized into six chapters. The first chapter introduces the background of the study, its objectives, the research plan, its significance and rationale, and the guiding research questions. The second chapter reviews the related literature and provides a rationale for this research and demonstrates how this work will bridge knowledge gaps. The third chapter offers an explanation and justification of the theoretical framework. The fourth chapter describes and justifies the methods utilized to answer the research questions. The fifth chapter describes the research findings. Finally, the sixth chapter includes conclusions, discussion, and suggestions for future research.

1.9 Conclusion

More research is necessary to identify ways that public libraries contribute to the adaptive capacities of communities and to discover how libraries can better meet the critical needs of their communities when disaster strikes.

Hurricane Katrina changed the way I viewed the roles of public libraries in our communities. How can communities demonstrate resilience after a disaster, and what roles do libraries play in their recovery? In hindsight, it was vital for me to lose so much, because it helped me understand what is essential: my family, my friends, my community — being a part of the

rebuilding process after Hurricane Katrina taught me that my school library was not just a building and that my city was not only its infrastructure. Both consist of people dedicated to working towards similar goals. Even though the Holy Cross School community is small, that experience demonstrated the pivotal role that a library can play during a time of intense crisis.

Chapter 2. BACKGROUND AND LITERATURE REVIEW

2.1 INTRODUCTION

This study explored the phenomenon of community resilience and how public libraries, as FEMA-designated essential community organizations, might enhance community resilience. To carry out this study, it was necessary to provide background information about disasters and to complete a critical review of the literature about the roles of libraries during disasters.

To conduct this literature review, I used multiple information sources, including books, dissertations, Internet resources, professional journals, government policies, and periodicals. First I provide some background introducing disasters and then discuss the intersection of emergency management in US and public libraries. Next I review the literature on public libraries and disasters. Throughout this review, I point out important gaps and omissions in the literature as and when they become apparent. In addition, relevant contested areas or issues identified are discussed. In summary I illustrate how the literature has informed my overall understanding of this research area and how the literature specifically contributes to the ongoing development of this research.

2.2 BACKGROUND

2.2.1 *Disaster Classification*

A disaster is a serious disruption of functioning society, causing widespread loss exceeding the ability of the affected community to cope. There has been much discussion (Perry 2006; Perry & Quarantelli 2005; Scanlan 1991; Quarantelli 2006) about nomenclature for disrupting events. Labels such as event, incident, crisis, emergency, disaster, catastrophe often get conflated and are sometimes used interchangeably. For the scope of this research, a disaster

is defined as any extreme event which overwhelms the local and state governments and initiates a request and approval for Federal Assistance. Disasters vary by type, severity, and of course, location. In addition, there are different stages of disaster.

Disasters vary by type. The most general categorization of disasters into types is Dyne's (1970) division of disasters into two types of causing agent: natural and man-made. The International Federation of Red Cross and Red Crescent Societies (IFRC) (2016) builds upon this notion of causing agents but renames them as natural hazards and technological or man-made hazards. There are several types of natural hazards identified by the IFRC: geophysical (earthquakes, landslides, tsunamis, volcanic activity), hydrological (avalanches, floods), climatological (extreme temperatures, drought, wildfires), or biological (disease epidemics, insect/animal plagues) (IFRC 2016). Technological or man-made hazards are events that are "caused by humans and occur in or close to human settlements" including transport accidents, displaced populations, civil disobedience, terrorism, famine, industrial accidents, and conflicts (IFRC 2016, 1). FEMA's typology of disasters is very similar to the IFRC. FEMA (2016) identifies 27 different types of disasters eligible for assistance in the United States (*see Table 2.1*). For this research, the types of disasters studied will be discussed using FEMA's disaster type descriptions.

Table 2.1: FEMA Disaster Types

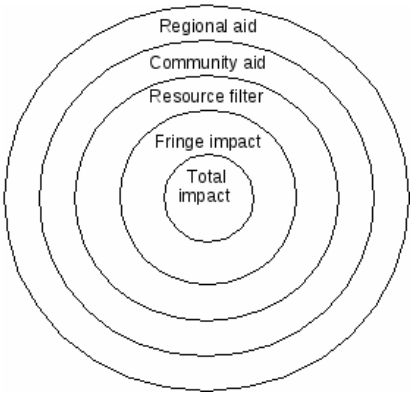
Chemical/Biological	Emergency Planning & Security	Mudslide/Landslide	Tornadoes
Coastal Storm	Explosions	Radiation Leak	Tsunami
Contaminated Water	Extreme Temperatures	Severe Storms	Typhoon
Dam/Levee Break	Fire	Snowstorm	Virus Threat
Drought	Flooding	Straight-line Winds	Volcano
		Technological	

Earthquake	Hurricane/Tropical Storm	Terrorism	Wildfire
Emergency Planning/Security	Industry Hardship		Winter Storms

Disasters are typically described in terms of severity, including loss of life, cost, measurements of the storm, and degree of disruption. Generally speaking, degree of disruption from disasters is usually framed in terms of normalcy, or how different things are from how they were pre-disaster. Some disasters have their own severity scales. The Fujita Tornado Damage Scale (Fujita 1971) rates tornadoes from an F0 to F5 and is based on wind speed estimates. Hurricanes are rated by categories on the Saffir-Simpson scale which measure them according to sustained wind speeds. Earthquakes have traditionally been measured by the Richter Magnitude Scale, although it has been replaced by the Moment Magnitude Scale.

In addition to his categorization of disaster type, Dynes (1970) also delineated disaster impact zones (*See Fig. 2.1*). The innermost circle is the total impact zone, where casualties and damage are the greatest. Immediately adjacent to the total impact area is the fringe impact zone, in which casualties and damage are significant but not overwhelming. The next ring is the resource filter zone, through which information passes from the inner (total impact and fringe) zones to the outer (community aid and regional aid) zones and material resources pass from the outer zones to the inner zones. The community aid zone is the area from which assistance is drawn for minor disasters whereas

Fig. 2.1: Disaster Impact Zones (Dynes 1970)



the regional aid zone is needed to support response and recovery from major disasters. Though it may appear as common sense, understanding impact zones is crucial to both how emergency responders can respond to a disaster and how long recovery might take in a community. For example, in my own experience while researching the role of libraries after the 2010 Earthquake and Tsunami in Maule, Chile, one of emerging themes of the research was where the institutions were with respect to the disaster impact zone (Celedon et al. 2012). For this reason, all the libraries studied in this project are located within zip codes where there was a FEMA declaration of disaster.

Disasters are also discussed in terms of phase or stage. May (1985) distinguishes three phases of disasters: "(1) an emergency period consisting of search and rescue activities, caring for disaster victims, and clearing debris from essential corridors; (2) a restoration period consisting of the repair of damaged public facilities and housing; and (3) a reconstruction period during which destroyed facilities' and properties are rebuilt" (p. 13). Fearn-Banks (2011) tells us crisis has five stages: detection, prevention/preparation, containment, recovery, and learning. Her work is important because it warns us that while some events have warning signs, others do not. For

example, we can predict the potential a tropical wave to turn into a tropical storm or hurricane; however, earthquakes occur with little warning.

Understanding the typology of disasters is relevant to this work in that it helped to make clear the wide array of experiences communities might face. It is also critical for us in the library information and science world to talk about disaster to those in the emergency management field in the terminology they use.

2.2.2 *Emergency Management and public libraries in the United States*

Resilience is an important part of our emergency management plan in the United States. President Obama (2009) formally established the Office of Resilience within the National Security Council in the White House with a goal: if communities can increase their resilience, then they are in a much better position to withstand adversity and to recover more quickly than would be the case otherwise. Our national preparedness agencies seek to create more resilient communities (Homeland Security 2008; Obama 2011; White House 2010).

Unfortunately, the concept of resilience was incorporated into emergency management without the ability to predict or measure it (Cutter 2008). This is an example of policy being ahead of research: we have incorporated the concept of resilience as a major aspect of our emergency response without a clear understanding of what it is or how to obtain it. Further, resilience was adopted into our national response while lacking metrics for benchmarks or measurements. Substantive and rigorous research studies are needed to identify how community organizations might add to resilience. Without a clear understanding of what it means to be resilient, supported by research findings, local organizations have no specific directives for how they might enhance community resilience or how to determine the effectiveness of their efforts

to do so.

FEMA (2010) called for the building of core capabilities by certain organizations to confront disasters and to measure and track progress of how communities can collaborate to better respond and rebuild after an event. These *Essential Community Organizations,* as they are designated by FEMA, are those organizations whose services are "necessary to save lives, or to protect and preserve property or public health and safety" (FEMA 2010). Specifically, FEMA formally designated public libraries (Stafford Act 2011) as essential community organizations, adding public libraries to the category of essential community services including police, fire protection/emergency services, medical care, education, and utilities. This new designation assumes public libraries have the potential to enhance resilience, justifying public libraries as a critical focus for this research study.

Public libraries are one of the organizations, as identified by FEMA, who can potentially make their communities more resilient. The emergency response literature is clear about the importance of resilience and the organizations expected to be involved in emergency management. However, FEMA falls short in identifying the specific roles said organizations should play. This research fills this gap by naming specific actions, roles, and services libraries can play to make their communities more resilient.

2.3 Literature Review

This literature review will look at research concerning public libraries and disasters, including disaster planning, roles of libraries during disasters, and what we have learned. Of concern is understanding what the research says about public libraries planning for and response to disasters. While completing this review, it became clear that LIS research about libraries and disasters is minimal and falls into three general categories: disaster planning, roles of libraries

throughout disasters, and lessons learned from responding to disasters. Throughout this review, I critique recent scholarly studies and point out essential gaps and omissions in the literature when they become apparent.

1. Disaster Planning

An important need for libraries to consider is disaster planning. To understand how libraries have responded to disasters, it is important we understand how libraries prepare for disasters. Yet, most of the literature in this space is at an anecdotal level or found in management textbooks rather than reports of empirical research. Very little research exists on public libraries and their disaster plans, so very little is known about them.

Beales (2003) qualitatively reviewed the policies at her hospital library to create a step-by-step approach to protecting library materials. Beales argued, "Librarians must protect collections to the best of their abilities" (2003, p.13). She laid out an extensive plan for other hospital libraries. Beales' work established a systematic way of creating a hospital library plan but did not generalize this plan to different library types. Focusing narrowly on hospital libraries is a serious limitation of her work.

Another criticism of Beales (2003) work is that her disaster plans narrowly focused on the library's collection. Beales did not consider how to protect library services, nor was there a plan for how to communicate with library staff during or after an emergency. We have moved past the time that a library is merely its collection, and it is critical that arrangements are made to keep our services intact and our staff safe during or after an emergency. It is critical for research to look at disaster plans beyond protecting materials. This dissertation investigates the actions of libraries in disaster planning beyond simply preserving our physical materials.

One important gap in the research on libraries in disasters may be revealed by reading Beales (2003), whose claims that other libraries are not aware of the need for a disaster plan are not substantiated with evidence. To see if these claims are actually substantiated anywhere, I looked for studies in this area. Unfortunately, I found none, revealing the need for a research on how aware existing libraries are of the need for a disaster plan, and their awareness of how they might create one. Beales points out that "Unlike other types of libraries, hospitals are cognizant of the need for disaster planning and will likely be supportive of such efforts" (2003, p.12). Libraries could find models for disaster planning from other types of organizations.

Though focusing on a different library type, small public libraries, Green and Teper's (2007) work has similar limitations to Beales'. Green and Teper (2007) also only consider physical materials when discussing their disaster plans. However, their research diverges from Beales' work in one critical aspect: they critique research like Beales' for being too "event-based, focusing on descriptive accounts of a particular disaster in one particular library" (Green and Teper 2007, p. 49). To move away from this precedent, Green and Teper use a combination of case studies and data from the 2005 Illinois Statewide Preservation Needs Assessment, and existing disaster planning documentation as data. It's clear from the limited focus on single events in the current literature that research must be done across different disasters to get a broader understanding of libraries and disaster planning.

More research is needed to build on both Beales' (2003) and Green and Teper's (2007), to understand how disaster planning works in other types of libraries. My research is filling this gap by investigating disaster plans in multiple libraries, covering multiple types of disasters. In addition, this dissertation examined how public library directors prepared for disasters beyond merely preserving physical materials. Though this dissertation will not completely fulfill this gap

in the research, this research provides the groundwork for understanding libraries roles' after disasters and provides a direction for future work.

2. The Roles of Libraries during Disasters

After the 2004 and 2005 Gulf Coast hurricanes, a significant amount of anecdotal evidence about the roles public libraries play during disasters was published. However, as with disaster plans and planning, there remains a shortage of scholarly research identifying and clarifying those roles.

However, two studies exist that identify the roles libraries are playing in disasters. Featherstone et al. (2008) have, so far, provided the only comprehensive list of the roles of libraries throughout disaster events. They relied upon an oral history project conducted by the National Library of Medicine to identify specific roles. Researchers conducted twenty-three telephone and email interviews of North American librarians who responded to bombings and other acts of terrorism, earthquakes, epidemics, fires, floods, hurricanes, and tornados. They included various library types in their interviews but were focused on illuminating roles for medical libraries.

Featherstone et al. (2008) found "librarians--particularly health sciences librarians--made significant contributions to preparedness and recovery activities surrounding recent disasters" (p.343). They identified the roles libraries played, classifying them into eight categories: institutional supporters, collection managers, information disseminators, internal planners, community supporters, government partners, educators and trainers, and information community builders. This is the first delineation of specific roles libraries play. However, because this work's primary goal was to consider the role of medical libraries, these roles need to be verified across different library types.

Featherstone et al. (2008) also emphasize the value of collaborative relationships between libraries and local, state, and federal disaster management agencies and organizations. This is a significant distinction from previous research in that does not merely investigate the library building or its collections, but drives libraries to work with outside organizations in their communities. This emphasis is the beginning of a push for libraries to have a seat at the table in disaster planning in their communities. However, it does not name what organizations libraries should work with, nor does it provide best practices for working with them.

Like Featherstone et al. (2008), Zach (2011) recommends that libraries need to collaborate with other organizations. Still, no evidence was presented regarding how to best work with other organizations to meet the information needs of the public in times of crisis. Additionally, while she encourages libraries to collaborate with organizations, she does not mention specific organizations with whom libraries should be collaborating. More research is needed to understand who libraries collaborate with before we can discuss best practices.

Zach (2011) reviewed library websites of fifty libraries in large United States cities. Through her work, we learned that providing risk alerts or even links to emergency preparedness and response resources was "not a priority for the majority of libraries" in this sample (Zach 2011, p.410).

This dissertation works to confirm public libraries play these same roles as medical libraries. Additionally, my research addresses this gap by identifying what organizations public libraries work with throughout disasters. This dissertation specifically investigated what organizations libraries worked with throughout disasters. A content analysis of anecdotal evidence was performed to help elucidate the actions, services, and roles of public libraries throughout disasters empirically to help address the lack of empirical evidence.

3. Learning from the Past

Scholarly evidence helps guide us to what is relevant from the past and what we need to investigate in the future. Though they are limited in scope and scale, four research projects emerged, providing evidence about what we know about libraries during previous disasters.

Some of the most crucial research evidence was discovered almost by accident. A yearly national survey of U.S. public libraries examined trends in Internet and public computing access in public libraries. Jaeger et al.'s (2007) 2004 to 2006 survey yielded 4,818 responses for a response rate of 69 percent, and they found, "public libraries also face increased demands to supply public access computing in times of natural disasters, such as the major hurricanes of 2004 and 2005" (p.4).

Though the goal of this national survey was to understand internet access in public libraries and not the role of libraries during disasters, the open-ended question at the end of their survey captured the significance of libraries after several Gulf Coast Hurricanes in 2004 and 2005. The last question of the survey asked, "In the space below, please identify the single most important impact on the community as a result of the library branch's public access to the Internet" (Jaeger et al. 2007b, p. 201). Respondents overwhelming discussed the services they provided in the wake of several hurricanes. This survey led to their next study, reviewed below, which is a more complete study of libraries during disasters.

Building from their unexpected discovery in their public library and internet access survey, Jaeger et al. (2007b) demonstrated public libraries successfully provided "a range of disaster preparedness and recovery services that were not provided and could not have been provided by other government agencies" (p.200). Though the majority of the data for this article was drawn

from the 2006 Public Libraries and the Internet study (Bertot, McClure, & Jaeger, 2006), they conducted dozens of interviews with public librarians and state library officials along the Gulf Coast about the activities, roles, and services of public libraries concerning the hurricanes.

Jaeger et al. (2007b) found libraries strengthened their communities in several ways, including:

- Helping communities prepare
- Providing emergency information
- Giving shelter
- Providing physical aid
- Caring for community members in need
- Working with relief organizations
- Cleaning up the damage after the storms

Their research covered a wide variety of public libraries concerning location and size, but focused singularly on hurricanes. The authors call for the need to clearly define the roles of public libraries in disaster situations within the community. This research provides the foundation for the study of actions, services, and roles libraries play. They also recommend more library involvement in emergency preparedness and disaster planning.

Grace and Sen (2013) conducted an autoethnography and employed situational awareness to consider community resilience in public libraries. Their research investigated how "public libraries promote and inhibit community resilience through an examination of day-to-day working practices" (Grace and Sen 2013, p. 514). Though this work did not investigate disasters, it did recognize public libraries' abilities to enhance all four of the adaptive capacities identified

in this dissertation: Economic Development, Social Capital, Community Competence, and Information and Communication.

After tornadoes hit the South-eastern United States on April 27th, 2011, Veil and Bishop (2014) conducted interviews with librarians and identified opportunities for libraries to enhance community resilience. For instance, their interview participants identified the following opportunities for libraries: offering technology resources and assistance; providing office, meeting, and community living room space; serving as the last redundant communication channel and providing a repository for community information and disaster narratives. They found that librarians perceived themselves to be able to meet the changing needs of the community, adapting or expanding services already offered.

Veil and Bishop (2014) use community resilience as a theoretical framework, explicitly justifying it for use to study libraries during disasters. This is further discussed in *Chapter 3*. Again, their research only focused on one disaster type, and more research is needed to understand how public libraries enhance community resilience across disaster types.

1.4 Conclusion

The library and information science literature is filled with anecdotal evidence of the actions public libraries have played and the services they have provided in disaster events. Moreover, existing research typically investigates an individual library within the context of a single disaster type rather than looking at actions and services across library and disaster types. This dissertation bridges a significant part of this gap by identifying the roles of public libraries throughout disaster more and across disaster types. Further, the dissertation identified what community organizations libraries collaborated within the face of disasters.

Chapter 3. CONCEPTUAL FRAMEWORK

3.1 INTRODUCTION

Theories guide researchers by telling them what they should pay attention to in their data. Theories provide a specific way of focusing on the phenomena of interest (Reeves et al. 2008) and allowing for the systematic studying of that phenomena. The goals of the chapter are to explain the theoretical framework of community resilience, describe its use in research, and discuss its employ in this research.

3.2 THEORETICAL APPROACHES TO RESILIENCE

The theoretical concept of resilience originated from mathematics and physics, which led to mostly quantitative views of its conceptualization. Crawford Holling (1973) used mathematical conceptions of resilience to study ecological systems to determine the characteristics that make natural systems adaptive and resilient. Holling's extensions of resilience to the world of ecology is relevant because it emphasizes the need to have multiple options and the need to view events in a regional context. He went further to point out that we should not presume to have sufficient knowledge; instead, we should recognize that we have limited knowledge and that events are often unexpected (Holling 1973). This critical idea led to a more qualitative approach to resilience, devising systems that can absorb and accommodate future events in whatever unexpected form they may take. His work was notable for his field of ecology. Still, this conception of resilience has grown to become the basis for the theoretical approach of resilience in both natural and social science.

Other fields have expanded on Holling's ideas. Newer theoretical discussions about resilience have focused on whether resilience is an outcome (Tierney and Bruneau 2007), a process (Norris et al. 2008), or both (Cutter et al. 2008) and different types of resilience, including physical (Bodin and Wiman 2004), economic (Gordon 1978), infrastructure (Scholl and Patin 2013), ecological (Holling 1973; Klein, Nicholls, and Thomalla 2003; Longstaff et al. 2010), and social (Carpenter 2015).

Resilience assumes hazards or disasters cannot be prevented and that a community can be equipped with resources and information that will enhance its ability to anticipate threats, reduce vulnerability, and respond to and recover from hazard events when they occur. Colten and Sumpter (2009) define community resilience as a community's ability to strengthen its response to deal with crises or disruptions (Colten and Sumpter 2009). A resilient system is "one that can withstand shocks and surprises, absorb extreme stresses, and maintain its core functions, though perhaps in an altered form" (Innes and Booher 2010, p. 205). Tierney and Bruneau (2007) describe resilience as the inherent strength of a community and as the ability to be "flexible and adaptable" (p. 14). For them, resilience is measured after a disaster and is an outcome of how the community responds. As part of their work in the Multidisciplinary Center for Earthquake Research, Bruneau et al. (2003) developed the *4R's of Resilience (4 R's)*: robustness, resourcefulness, redundancy, and rapidity.

Robustness is the ability of "systems, system elements, and other units of analysis to withstand disaster forces without significant degradation or loss of performance" (Tierney and Bruneau 2007, p. 15). Robustness reflects the ability of the entire system to withstand disruption. For example, seismic building codes are designed to mitigate structural damage in case of earthquakes, thus maximizing structural robustness.

Redundancy refers to the "extent to which systems, system elements, or other units are substitutable, that is, capable of satisfying functional requirements, if significant degradation or loss of functionality occurs" (Tierney and Bruneau 2007, p. 15). For example, having a backup generator at a hospital in case the power goes out during a storm is an example of a redundant electrical system.

Resourcefulness is the ability to "diagnose and prioritize problems and to initiate solutions by identifying and mobilizing material, monetary, informational, technological, and human resources" (Tierney and Bruneau 2007, p. 15). For a community to bounce back after an event, it needs to have adequate access to materials, supplies, repair crews, and other resources and find smart ways to use the available resources to overcome the disruption. For example, after Hurricane Katrina, my school was left without a library, which made it difficult for me to provide curriculum support to the teachers and students. To overcome this lack of physical resources and space, I created a "cybrary," an online collection of materials and resources, organized according to our state and school curricula (Patin 2016).

Rapidity is the "capacity to restore functionality in a timely way, containing losses and avoiding disruptions" (Tierney and Bruneau 2007, p. 17). Rapidity is about how quickly a community can get back to normal after a disaster. Rapidity depends on robustness, redundancy, and resourcefulness.

3.3 Community Resilience Theory

A resilient community is one that can bounce back from an event. It might not necessarily return to its previous state; instead, it may establish a new functional normally. In addition to the *4 R's*, other factors are contributing to a community's ability to become resilient. Ann Carpenter

(2015) describes both physical and social elements that contribute to a community's resilience. Physical resilience is measured by the severity of the damage and the amount of time it takes to return to normal after the shock. Social resilience describes how quickly individuals, groups, organizations, and institutions respond to external or internal shocks.

In their framework, Norris et al. (2008) define community resilience as a measure of how well communities adapt. Still, they argue that resilience requires a conscious effort and must be maintained over time or sustained. Resilience is framed as an ongoing process rather than a simple outcome (Paton and Johnston 2006), and continual learning is required to improve the capacity to handle disruptions.

Norris et al. (2007) believe that resources have dynamic attributes. They draw upon Bruneau et al.'s *4R's* to help describe the dynamic nature of these resources. Robustness, redundancy, and rapidity are all seen as dynamic attributes of resilient communities. In the community resilience framework, robustness measures the strength of resources in the community and considers their probability of deterioration. Redundancy measures the extent to which resources are sustainable in the event of a disaster or crisis. Finally, rapidity refers to how quickly the resources in the community are accessed, used, or mobilized. Community resilience relies on both the resources themselves and the dynamic attributes of those resources.

Goodman et al. (1998, p. 259) defined community capacity in two ways: "(1) the characteristics of communities that affect their ability to identify, mobilize, and address social and public health problems and (2) the cultivation and use of transferable knowledge, skills, systems, and resources that affect community." These capacities are adaptive if they are robust,

redundant, or rapidly accessible. For the scope of this dissertation, resources and capacities are considered to be interchangeable.

The concept of *adaptive capacities* incorporates both resources and dynamic attributes. Adaptive capacity is the ability of a system to adjust, change, moderate the effects, and cope with a disturbance (Burton et al. 2002; Brooks et al. 2005; Cutter et al. 2008). Norris et al. (2007) identified four interconnecting resources of a community affecting its overall resilience: Economic Development; Social Capital; Community Competence; and, Information and Communication (*see Fig. 3.1*). These four resources act as adaptive capacities if they are robust, redundant, and rapidly accessible. In the next section, I will discuss these four adaptive capacities in more detail.

3.4 The Four Adaptive Capacities of Community Resilience

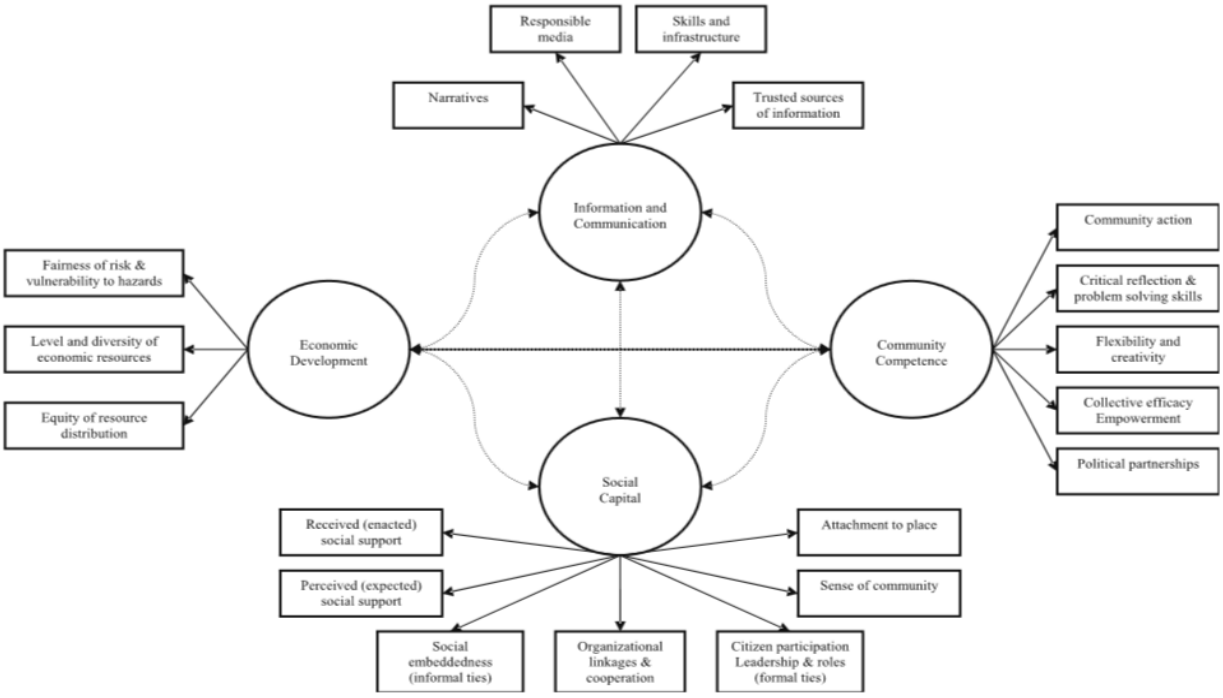
3.4.1 *Economic Development*

Economic Development involves the sustained, concerted actions of policymakers and communities to promote the standard of living and economic health of a specific locality or neighborhood and is a critical aspect of the community (Schumpeter and Backhaus 2003). Norris et al. (2007) identify three dimensions of economic development: fairness of risk and vulnerability to hazards, level and diversity of economic resources, and equity of resource distribution.

The first aspect of economic development is concerned with the *fairness of risk and the vulnerability to hazards* that a community assumes. Norris et al. (2007) argue that people in more impoverished communities assume more risk because there are fewer infrastructures,

organizational networks, and social supports. Another critical aspect of economic development is the *level*

Fig. 3.1: Community Resilience as a set of Networked Adaptive Capacities (Norris et al. 2007)



and diversity of economic resources. Economic growth, the stability of livelihoods, equitable distribution of incomes and assets, land and raw materials, physical capital, accessible housing, health services, schools, and employment opportunities are all significant economic resources for communities (Norris et al. 2007). Norris et al. (2007) explain the importance of *equity of resource distribution* as a component of economic development. Resource distribution studies look at the equity of income and other resources and how they are divided amongst members of the community. Economic resilience at a community level depends to a large extent "not only on

the capacities of individual businesses but on the capacities of all the entities that depend on them and on which they depend" (Norris et al. 2008, p. 136).

3.4.2 *Social Capital*

The second adaptive capacity is social capital. It includes the need for network structures and linkages, social support and community, bonds, roots, and commitments (Norris et al. 2008). Pierre Bourdieu (1986) distinguished three forms of capital: economic, cultural, and social. He defines "social capital" as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of acquaintance and recognition" (p. 198). You can see the relationship between Bourdieu's conception of social capital and its application in the community resilience framework.

Social capital involves an individual's ability to gain returns by investing, accessing, and using resources embedded in social networks. This first factor "emphasizes the need for networks over hierarchies as methods of organizing" (Grace & Sen 2013, p. 515). *Received (enacted)* and *perceived (expected) social support* are important aspects of social capital. Individuals or communities might expect social support from specific social ties but receive support from a different relationship.

Formal ties to the community include citizen participation and leadership as manifested through voter participation, membership in religious congregations, school and resident associations, neighborhood watches, and self-help groups. Formal community ties determine who is participating, why, and how. *Informal ties* to the community include notions of social embeddedness that determine the strength of one's social network. A sense of community

encompasses "the relationship between individuals and their larger neighborhoods and communities" (Norris et al. 2008, p. 139).

3.4.3 *Information and Communication*

Norris et al. (2008) describe the effective use of information and communication as the "creation of common meanings and understandings and the provision of opportunities to articulate needs, views, and attitudes" (p. 140). Defining characteristics of this capacity include responsible media, narratives, skills, infrastructure, and trusted sources of information. *Responsible media* refers to whether the media coverage and the information within that coverage include relevant information for those who need it; rather than media coverage repeating images of misery.

"Systems and *infrastructure* inform the public, with trust being a key issue and with a preference for localized sources" (Grace & Sen 2013, p. 516). For information to be useful, it needs to come from a t*rusted information source.* Trusted information sources are embedded in communities and typically have demonstrated reliability previously. After disasters, we often see memorials and communities coming together to share their stories. This type of narrative "gives the experience shared meaning and purpose" (Norris et al. 2008, p.140). The narratives demonstrate experiences of shared meaning and purpose and help members of the community create a collective understanding of reality and put them on the path to healing. After Hurricane Katrina, it was common to bump into former neighbors or colleagues, and sharing your stories became a norm for us.

3.4.4 *Community Competence*

Community competence was defined by Cottrell (1976) as a community that is "able to collaborate effectively in identifying the problems and needs of a community; can achieve a working consensus on goals and priorities; can agree on way and means to implement the agreed-upon goals, and can collaborate effectively in the required actions" (197). Norris et al. (2008) consider community competence to be the collective of human agency. Community competence is very much like social capital but on a community level. Beyond what social capital we have as individuals or organizations, community competence is about what we can all achieve together.

Community action is the community's ability to act in a way that will help it recover from adverse physical or social events and includes coping strategies and shared plans for the future. Not only must a community be able to identify its problems, but also it must be able to work towards solving them. *Critical problem-solving skills* are vital in identifying issues and needs as well as in helping the community come to a consensus regarding goals and priorities. *Flexibility and creativity* determine a neighborhood's ability to adapt and change goals and objectives in light of new information and learning. *Collective efficacy and empowerment* determine trust and the shared willingness to work for the common good of a neighborhood and one's belief that one can and should participate. Finally, *political partnerships* are a type of political approach to civic involvement, and they can be either proactive or reactive.

3.5 Community Resilience in Previous Research

Since its conception, the theory of community resilience has been applied in several fields. Walsh (2015) and Chandra et al. (2011) rely upon the theory to demonstrate family and

health resilience after disasters. Along these lines, Miley et al. (2016) describe how different social work organizations can enhance community resilience. The theory has also been applied to climate change (Reser & Swim 201; Tyler & Moench 2012) and terrorism (Hobfoll et al. 2009; Norris & Stevens 2007).

Within the field of disaster sociology, community resilience continues to be a useful framework for understanding how to help communities bounce back after an extreme event. Sherrieb et al. (2010) extended the framework to measure the adaptive capacities of community resilience. In this work, the researchers developed indicators to measure two adaptive capacities: economic development and social capital. The results demonstrated their measure of community resilience capacities correlated favorably and as expected when validated with the archival and survey data (Sherrieb et al. 2010). This study provided the first step in identifying existing capacities that may predict a community's ability to bounce back from disasters. The researchers also identified a lack of measurable indicators for both the information and communication and community competence capacities. The researchers suggested that more qualitative work is needed to identify potential indicators. This study seeks to do just that.

To date, four studies within the library and information science field have employed the community resilience theory as a framework successfully. After the April 27th tornadoes of 2011, Veil and Bishop (2012) conducted interviews with public library managers to identify opportunities and challenges for public libraries to enhance community resilience. They found that public libraries enrich these interconnections by building a neighborhood’s adaptive capabilities (Veil and Bishop 2012). Their data suggested that libraries improved *Information and Communication* through the provision of Internet access and computer availability.

Grace and Sen (2013) conducted an autoethnography and employed situational awareness to consider community resilience in public libraries. Their work investigated how "public libraries promote and inhibit community resilience through an examination of day-to-day working practices" (Grace and Sen 2013, p. 514). Though this work did not investigate disasters, it did recognize public libraries' abilities to enhance all four adaptive capacities: Economic Development, Social Capital, Community Competence, and Information and Communication. The paper connects "community resilience in relation to a broad environmental agenda and sustainability including the role of public libraries with regard to such corresponding literacies as eco-literacy and sustainability literacy" (Vårheim, 2017, p. 4).

Also, using autoethnography, Patin (2016) built upon the work of Grace and Sen, applying the community resilience theory as a framework to reflect how a school library enhanced community resilience after Hurricane Katrina. This work also found that libraries worked to help their communities rebound and added to the resiliency of that school community after a disaster.

3.6 Application of the Theory

The community resilience adaptive capacities provide a lens through which to look at complicated problems and social issues, focusing attention on different aspects of the data and providing a framework within which to conduct analysis (Reeves et al. 2008). For this research, the theory of community resilience (Norris et al. 2008) was used as the analytical framework, a lens that points the researcher to which phenomena are relevant. The coding schema (*Appendix A*) was derived from the theory of community resilience. Building upon the work of Veil and

Bishop (2014), this dissertation identified how public libraries enhanced community resilience through adaptive capacities.

Chapter 4. METHODOLOGY

4.1 Introduction and Research Questions

This multi-method qualitative study explored the phenomenon of community resilience and how public libraries, as FEMA-designated essential community organizations, might enhance community resilience. In seeking to understand this phenomenon, the study addressed the following research questions:

1. What actions have public libraries taken during and after extreme events to support their communities?
2. What services have public libraries provided to their communities during and after extreme events?
3. What roles have public libraries played in their communities during and after extreme events?
4. How do public library directions/managers think public libraries enhance community resilience and build adaptive capacities?
5. How do disaster responders think public libraries enhance community resilience and build adaptive capacities?

4.2 The rationale for Research Design

Qualitative research is concerned with how the complexities of the sociocultural world are experienced, interpreted, and understood in a particular context (Patton 2002). One of the goals of qualitative research is to examine interactions by allowing the researcher to enter the world of others and attempt to achieve a holistic rather than reductionist understanding (Patton 2002). The qualitative methodology emphasizes discovery and description, and its objectives generally focus on extracting and interpreting the meaning of experience (Denzin & Lincoln 2003). These objectives contrast with those of quantitative research, where the testing of hypotheses to

establish facts and to designate and distinguish relationships between variables is usually the intent. The goals of this research are for the discovery and description of the phenomena of interest to inform future research.

The research questions were answered here by a multi-method design using both content analysis and interviews. Content analysis is a "research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use" (Krippendorf 2013, p. 24). An interview is a fundamental tool in qualitative research, where interviewers "attempt to understand the world from the subjects' point of view, to unfold the meaning of peoples' experiences, to uncover their lived world" (Kvale 1996, p. 1). I performed this research with the underlying assumption that people's experiences and their ways of knowing are essential and worthy of study.

As there is very little research about public libraries and community resilience, a content analysis of the experiences of public libraries throughout disasters, as reported in library publications, was performed to help identify roles, actions, and services libraries have previously played throughout disasters. Semi-structured interviews were then built from the results of the content analysis to guide library staff and emergency management participants in speaking about their experiences during disasters.

4.3 Content Analysis Pilot Study

4.3.1 *Content Analysis Pilot Study Method*

Krippendorf (2013) identifies six components of content analysis that were utilized in this phase of the research: unitizing, sampling, recoding/coding, reducing data to manageable representations, inferring contextual phenomena, and narrating an answer to the research

questions (p. 84). These components organized the research process in this phase and were briefly described below.

The first step in content analysis involves unitizing, which Krippendorf (2013) describes as relying on definitions of relevant terms. The literature review was the primary means by which definitions were created. According to Marshall and Rossman (1995, p. 28), "a thoughtful and insightful discussion of the literature builds a logical framework for the research that sets it within a tradition of inquiry and a context of related studies." It is the job of the literature review to provide a background for the context of a study and to define relevant terminology. For this research, the literature pointed to a theoretical framework as well (see Chapters 2&3).

The second step involves developing a sampling plan. Potential sources were considered for gathering items to include in the content analysis. The literature review demonstrated the Disaster Information Management Research Center's (DIMRC) *Bibliography on Library Roles in Disaster Preparedness, Response, and recovery* is the complete collection of disaster and library-related resources and would able to provide rich data to answer the research questions.

A sample of five percent of the items was randomly selected to be representative of the entire Bibliography. This plan allowed for reducing the data in a meaningful way. Selected items were then uploaded into a Hermeneutic Unit in Dedoose, a qualitative research analysis tool.

The third step in this process is reading and coding. The sample items were read and coded per the theoretical-based coding scheme developed by using the community resilience framework, as described in Chapter Three.

The fourth and fifth steps of this research consisted of reducing data and inferring context from the coded selections. As the codes were identified, I took notice of and recorded when and

how the codes appeared and paid attention and recorded to the different contexts in which they emerged. After all the documents were coded, I read through all the codes and spent time inferring meaning from the data that was coded. Next involved using Dedoose to identify other correlations between codes or any other relevant relationships.

The sixth and final step in this phase of the research involved analyzing and organizing the data to answer the research questions. A summary of this stage of the research process is in Table 4.1.

Table 4.1 Summary of Content Analysis

1. Potential sources were considered for gathering items to include in the items to be analyzed.
2. The Disaster Information Management Resource Center's *Bibliography on Library roles in Disaster Preparedness, Response, and Recovery* was selected as the source of documents for the content analysis because it represents the best collection of items about the roles of public libraries throughout disasters.
3. Codes were selected from the Community Resilience framework.
4. A pilot study was conducted using five percent of the items to test the first coding scheme. The coding scheme was refined based on the pilot.
5. Codes were analyzed, and relationships were identified.
6. The data identified in the coding process was used to answer research questions 1-3.

4.3.2 *Content Analysis Pilot Study Research Sample*

The research sample for this content analysis was selected from the DIMRC's collection of documents related to the roles libraries have played in disasters, the *Bibliography on Library Roles in Disaster Preparedness, Response, and Recovery*. The DIMRC is a subdivision of the National Library of Medicine tasked with developing and providing access to health information resources and technology for disaster preparedness, response, and recovery. The DIMRC

Bibliography includes published literature, both anecdotal and research-based, on the roles of libraries and librarians and information professionals in "the provision of disaster-related information" (NLM 2016). One of the DIMRC's initiatives includes the ongoing development of a collection of the published literature and other resources on the role of librarians and information professionals in the provision of disaster-related information.

The DIMRC's *Bibliography* is recognized as the most complete, dynamic, and well-organized collection of resources and tools about disasters for use by public health officials, first responders, emergency physicians, and other health care professionals, medical students, and residents (Koustova 2010; Love et al. 2014) and therefore functions as a suitable source for the selection of items for this research. The DIMRC *Bibliography* includes 253 items, including journal articles, magazine articles, blog posts, special reports, newspaper articles, dissertations, narratives, and conference proceedings. Five percent of the Bibliography was selected for the pilot study.

4.3.3 *Content Analysis Pilot Study Findings*

The goals of the pilot study were threefold: first, to test the suitability of the content of the DIMRC *Bibliography* to answer the research questions; second, to identify any additional methodological considerations; and third, to verify the fitness of the coding scheme. To conduct the pilot study, I randomly selected five percent (n=13) of the documents from the DIMRC *Bibliography* (n=253) and analyzed them using the first coding scheme.

The pilot study accomplished all three of its goals. It demonstrated that the items in The DIMRC *Bibliography* could answer the research questions. Besides, it generated one change that was incorporated into the research design. The difference was that instead of using the coding

scheme derived from the community resilience framework as-is, it remained open. As discussed below, it became clear that new codes would emerge, and they needed to be captured in the data.

The final goal of the pilot study was to test the coding scheme for its suitability to analyze the documents in the content analysis. The pilot study demonstrated that a few adjustments were necessary. First, it was essential to split a code derived from the framework into two codes. **Narratives,** or how people share their experiences, are a necessary aspect of the theoretical framework. It became apparent during the pilot study that **narratives** of two types were presented in Bibliography. The first type was sharing narratives and using example **narratives** to be responsive to community needs. For example, articles often mentioned people coming to the library to share stories about what happened to them during a disaster. The second type were **narratives** used by librarians to make decisions about actions and services. Therefore, the **narratives** code was split into **narratives_sharing** to capture people sharing their stories in libraries and **narratives_using** to capture stories that were being used for learning or decision-making. Also, one new code emerged during the pilot who was added to the coding scheme: **information needs**. Though the concept of **information needs** was not mentioned as a vital aspect of the community resilience theory, its importance became evident in how frequently the documents explicitly mentioned or referred to **information needs**.

4.4 Content Analysis

The content analysis of the DIMRC bibliography was conducted following almost the same method as the pilot study. The research source was the same as in the pilot study; items that were selected for the pilot study could also be chosen for the content analysis. However, for the full content analysis, documents were divided into two groups: research items and anecdotal items.

Twenty-five percent of the items from the *Bibliography* (n=63) were randomly selected and then coded and analyzed. The results of this stage of the research are presented in Chapter 5.

4.5 Interview Pilot Study

4.5.1 *Interview Pilot Study Methods*

The following steps summarize the interview pilot study:

1. Two interview schedules were designed. One interview schedule was developed for public library managers and directors, and their experience with the action, roles, and services libraries played after disasters in FEMA-declared disaster zones. The second interview schedule was created for emergency managers and their experience with the action, roles, and services libraries played after disasters in FEMA-declared disaster zones.
2. Potential participants were contacted by email, and those who agreed to participate were contacted to schedule a face-to-face, phone, or Skype interview.
3. The interview data were transcribed and analyzed using the coding scheme. Again, the coding scheme remained open, allowing for the possibility of emerging codes.

4.5.2 *Interview Pilot Study Participants*

Research participants for the pilot study were purposefully selected using the criteria described below. Purposeful sampling is a typical mechanism to yield rich data about the population studied (Patton 2002; Silverman 2000). It involves the identification of particular criteria of importance to the research, and then, based on those criteria, selecting participants who meet the requirements. Preliminary criteria for inclusion were identified and shaped by

Phase One of this study (Table 4.2). The criteria were chosen to provide a diversity of experiences.

Table 4.2: Initial Participation Selection Criteria

Public Library Directors/Managers	Disaster Response Agents
Experience in extreme event	Experience in extreme event
Type of Disaster	Type of Disaster
Geo-type of Library (Urban, Suburban, Rural)	Type of Agency
Size of Library	Agency Position

For the pilot study, I identified participants based on the preliminary criteria for inclusion. Public library director/manager participants had to have been working for any size public library that experienced a disaster in the last fifteen years. Disaster response agents had to have experience working for a community organization responsible for emergency management in a recently FEMA-declared disaster zone.

The participants for the pilot study consisted of two public library directors and two disaster response agents (FEMA representatives, City/County Response Planners, etc.) working in recently FEMA-declared disaster zones. I looked specifically for participants who represented a diversity of experience on markers including library size, disaster type, and library type (see Table 4.2). Interviews were recorded, transcribed, and analyzed using the coding scheme based on the community resilience coding scheme, as described in Chapter Three.

4.5.3 *Interview Pilot Study Findings*

The goals of the interview pilot study were threefold and similar to the objectives of the content analysis pilot study: to test the suitability of the interview questions to answer the research questions, to identify any additional methodological considerations, and to verify the suitability of the coding scheme. To conduct the pilot study, I selected four research participants using the process described above, interviewed them, transcribed the interviews, and analyzed the interviews using the coding scheme.

The goals of the pilot study were met. The results of the pilot study demonstrated that the interview questions could answer the research questions, and the coding scheme was suitable for analyzing the interview data. No additional methodological considerations emerged from the pilot study.

4.6 INTERVIEWS

The interviews were conducted following the same method as the pilot study, and IRB approval was received for the interview research. The research participant sampling process was the same as that used in the pilot study. However, participants who were selected for the pilot study could not be selected to participate in interviews for the main study. The research participants consisted of seven public library directors and six disaster response agents (FEMA representatives, City/County Response Planners, etc.) working in recently FEMA-declared disaster zones. The results of this stage of the research are discussed in Chapter 5.

4.7 ISSUES OF TRUSTWORTHINESS

In qualitative research, trustworthiness consists of efforts by the researcher to address the more traditional quantitative aims of *validity*, the degree to which something measures what it is supposed to measure, and *reliability*, the consistency with which it measures over time (Williamson & Johnson 2013). "If research is valid, it reflects the world being described. If work is reliable, then two researchers studying the same phenomenon will come up with compatible observations" (Bloomberg & Volpe 2008, p. 76). Guba and Lincoln (1998) identify credibility, confirmability, and transferability as crucial aspects for researchers seeking to establish the trustworthiness of a qualitative study. Researchers also try to control for potential bias that might be present throughout the design, implementation, and analysis of the study.

Methodological validity entails considering how well matched the logic of the method is with the kinds of research questions being asked. Also of concern is the type of explanations developed throughout the research process. To address this type of validity, the researcher must consider the relationship between the research design components, including the purpose, conceptual framework, research questions, and methods. *Interpretative validity* involves asking how valid the data analysis is and how valid the interpretation of that analysis is. Although ensuring interpretative validity is somewhat dependent on how methodological soundness is provided, it goes further in that it directs attention to the quality and rigor with which the researcher interprets and analyzes concerning the research design (Bloomberg & Volpe 2008).

To enhance the methodological validity of the study, I used multiple data collection methods. Gathering data from various sources and by multiple methods yielded a fuller and more vibrant picture of the phenomena of interest. To enhance the interpretative validity of this study,

my research employed the following strategies: assumptions were clarified upfront, and the steps through which interpretations were made were charted. Besides, I reviewed and discussed findings with professional colleagues as a way to make sure the participants' reality was adequately expressed.

Reliability, in the traditional sense, refers to the extent similar research projects can replicate a research project. Qualitative research usually does not cover enough of an expanse of subjects and experiences to provide a reasonable degree of reliability (Bloomberg & Volpe 2008). As argued by Lincoln and Guba (1985), the more critical question is whether the findings are consistent and dependably represent the data collected. In qualitative research, the goal is not to eliminate inconsistencies but rather to ensure that the researcher recognizes and understands them when they occur. Thus, it becomes mandatory for the researcher to document procedures and demonstrate that coding schemes and categories have been used consistently.

Credibility ensures the research accurately represents what participants think, feel, and do, and whether the findings are accurate. This criterion is a vital component of the research design (Cresswell 2003; Marshall & Rossman 2006; Maxwell 2005). Researchers need to test the validity of their conclusions through both methodological and interpretive validity (Mason 1996).

The concept of *confirmability* corresponds to the notion of objectivity in quantitative research (Bloomberg & Volpe 2008). The implication is that the findings are the result of the research, rather than an outcome of biases and subjectivity of the researcher. Although qualitative researchers realize achieving true objectivity is impossible, they must be reflexive and illustrate how their data can be traced back to its origin. As such, the researcher's journal is used

to demonstrate confirmability, including ongoing reflection by journaling, which includes field note records or transcript notations, allowing the researcher the ability to assess the decisions and process of this study.

Transferability (Lincoln & Guba 1985) includes how the reader determines whether and to what extent the research context can transfer to another context. Regarding transferability, Patton (2002, p. 491) promotes thinking of "context-bound extrapolations," which he defines as "speculations on the likely applicability of findings to other situations under similar, but not identical, conditions" (p. 489). Toward this end, I addressed transferability by way of a detailed description of the participants and of the context. Depth, richness, and detailed description provided the basis for a qualitative account's claim to relevance in a broader context (Schram 2003).

4.8 Ethical Considerations

A social science researcher is responsible for both informing and protecting participants. For interview research, this process involves voluntary cooperation. Participants must be informed about the purpose of the study before participating. In any research study, ethical issues relating to the safety of the participants are of vital concern (Berg 2004; Marshall & Rossman 2006; Schram 2004). Topics such as privacy are imperative, and therefore participants' identifying information must be protected.

Research after disasters involves specific ethical considerations. Within the context of a disaster, there are a few extra considerations important for ethical research. Disaster sociologists have noted (Phillips 2014; Stallings 2003; Stallings 2007) that participants may have a difficult time admitting to being ill-prepared or having an inadequate response to a specific disaster.

Several steps were taken to mitigate this concern. First, the questions are framed in favorable terms. For example, rather than asking a participant what did not go well, reframing the question as "what would you improve next time" allows them to discuss issues with their disaster response without becoming defensive.

Although no severe ethical threats were anticipated to any of the participants in this research, I employed measures to ensure the protection and rights of the participants. No identifying information was collected to protect the participants' privacy. Additionally, I took extra care to remove identifying information from the transcripts that might reveal a specific library or disaster organizations, as well as any mention of a particular disaster. For example, if a participant mentioned a specific storm such as *the April 27th Tornadoes*, it was only transcribed as a tornado.

Through both the recruitment letter (Appendix D) and within the interview (Appendix E), I worked to create a supportive and trusting environment for the interviewees. Sharing my personal experiences with disaster help to achieve this. If any of the questions been noted to have caused discomfort for the interviewees in the pilot, they would have been removed; fortunately, participants in the pilot study answered all of the questions without any signs of discomfort. Finally, open-ended questions at the end of the interview allowed participants to share anything else they deemed relevant, which sometimes included their emotions concerning the disaster experience.

Informed consent was obtained to make risks clear to participants. The significant risk associated with this research was that asking participants to consider and talk about experiencing a disaster had the potential to be emotionally traumatic. Third, participants' rights and interests

were considered of primary importance when choices were made regarding the reporting and dissemination of data. I was committed to keeping the names or other significant identity characteristics of the sample organizations confidential. Research-related records and data have been password-protected and thus only accessible to me.

4.9 Limitations of the Study

Delimitations clarify the boundaries of the study. Though many types of organizations, as well as other types of libraries, impact community resilience, this research focused on public libraries in the United States. As this is qualitative research, decisions have to be made about how to focus and bound your research. By focusing only on public libraries, qualitative research methodologies allowed me to dig deeper into public libraries their relationship with community resilience. After completing the literature, focusing on public libraries makes sense considering their identification as an essential community organization.

Because analysis ultimately rests with the thinking and choices made by the researcher, qualitative studies, in general, are limited by researcher subjectivity. The researcher is the lens through which this research is seen. Therefore, I needed to be aware of my assumptions, interests, and perceptions. One of the critical potential limitations of this study is the issue of subjectivity and potential bias regarding my own experience working in a New Orleans school library throughout Hurricane Katrina. As described above, qualitative researchers can never be completely objective. I acknowledged personal experiences with disasters as a librarian in Chapter 1. Additionally, I worked to limit my subjectivity by being reflexive, considering field notes, and transcript notations.

A related limitation is that interviewees have difficulty discussing events surrounding disasters. Disaster sociology research (Phillips 2014; Stallings 2003; Stallings 2007) has shown that it is often difficult for participants to admit to being unprepared for a disaster. I mitigate this limitation by using interview questions that avoid assigning blame, potentially making interviewees feel defensive.

Participants sometimes try to answer questions the way they perceive the researchers want them to (Heppner et al. 2008). To address the problem of participant reactivity, I continued to reflect on the ways researcher presence might influence participants. Experience as a librarian who has experienced a disaster, as well as prior research experience (Garrido & Patin 2010; Patin 2016; Scholl & Patin 2014), was helpful in this regard. Furthermore, efforts were made to create an honest and open dialogue with interviewees.

Chapter 5. DATA COLLECTION AND FINDINGS

5.1 INTRODUCTION

The goals of this chapter are to explain the data collection procedures and present the findings from the data. Through a multi-method qualitative approach, this work utilized content analysis and interviews to determine the actions, roles, and services public libraries provided throughout disasters, as well as how public libraries enhanced community resilience. First, I performed a content analysis on the Disaster Information Management Research Center database, which is composed of items identified by the U.S. Department of Health and Human Services' National Library of Medicine. The content analysis focuses on:

- The actions public libraries have taken throughout disasters;
- The services libraries have demonstrated previously throughout disaster;

- The roles public libraries play throughout disasters.

For the second phase of the research, I conducted interviews with participants to understand how libraries might enhance community resilience. The participants in this study included a purposefully selected group consisting of six to ten public library directors and six to ten disaster response agents working in declared FEMA disaster zones from 2005-2018. Participants were selected as a purposive sample to identify the broadest diversity of library actions, services, and roles across disaster experiences.

5.2 Phase 1: Content Analysis

5.2.1 *Data Collection*

The Disaster Information Management Research Center's (DIMRC) *Bibliography on Library Roles in Disaster Preparedness, Response, and Recovery* is the complete collection of disaster and library-related resources and provided rich data to answer the research questions posed in this dissertation. One of the DIMRC's initiatives includes the ongoing development of this bibliography of the published literature and other resources on the role of librarians and information professionals in the provision of disaster-related information. When I began this research, the entire bibliography included 253 items, including journal articles, magazine articles, blog posts, special reports, newspaper articles, dissertations, narratives, and conference proceedings.

The goals of the content analysis were to understand the actions, roles, and services libraries have provided throughout disasters in the United States. To help frame the data, a coding scheme, as described in Chapter 4, was derived from the community resilience framework (See *Appendix A*). Definitions and examples of each code are found in *Appendix A*.

To conduct the study, I randomly selected twenty-five percent (n=63) of the documents from the *Bibliography on Library Roles in Disaster Preparedness, Response, and Recovery* (n=253). I analyzed them using the coding scheme that emerged from the pilot study. A random number generator was used to select the items to be coded in the analysis (see *Appendix B*). The selected items were then uploaded into Dedoose, a qualitative analysis program, and analyzed using this program.

5.2.2 *Findings*

The content analysis revealed a wide array of disaster experiences. Collectively the major disaster types mentioned were: wildfires, tornadoes, shootings, hurricanes and storm surge, a water crisis, the opioid epidemic, flooding, severe snowstorms, earthquake, terrorist attacks, rioting, and landslides. The diverse nature of these disaster types helps us understand what libraries did to respond to disasters across the board. However, it is nonetheless, essential to look at each disaster type separately. By researching different disaster types, we can better understand if libraries performed differently depending on the disaster type.

Figure 6.1: Word Cloud Result from Coding

The frequency of the codes is visualized in the *Word Count Result from Coding* (fig. 6.1). From this visualization, we can see which codes appeared most often in the data. **Information Needs**, **Sense of Community**, **Infrastructure**, **Trusted Sources of Information**, and **Flexibility/Creativity** were the codes appearing most frequently. Whereas **Economic Development, Responsible Media**, and **Redundancy** were represented least in the data. The frequency of the **information needs** was one of the most exciting aspects of the code count.

Although information needs were not one of the conceptual elements from the theory, during the pilot, it became clear this was a concept that needed to be captured. While the community resilience framework has been applied in the context of libraries during disasters before, there has been no theoretical development in regards to the information and communication aspects of the framework. As an information scientist and a librarian who has experienced a disaster, I recognize that understanding **information needs** and how to solve them

for our community is critical to our service. In Figure 6.1, Info needs are the most significant part of the word cloud because the data mentioned **information needs** more than the other codes.

For this chapter, the findings are presented by first the research questions and then the significant codes derived from the theoretical framework. The codes are bolded to help make the codes more explicit.

5.2.2.1 Research Question 1: Actions

SUMMARY: The first research question was: **What actions have public libraries taken during and after extreme events to support their communities?** The actions that took place involved **economic development**, **social capital**, **information and communication**, and **community competence**. In the area of economic development, the code most often mentioned was **economic resources** to refer to the **economic resources** necessary to get the library to reopen. As part of information and communication, specific actions most often involved **infrastructure**, **skills**, and **trusted information sources**. For example, in several cases, librarians took training classes to help them gain the **skills** necessary to provide emergency services.

Another example was the need for **infrastructure** to communicate with both employees and volunteers. Community competence was also significant, especially in the area of **Flexibility/Creativity**. For social capital, **social ties** and personal relationships played a vital role in getting the library up and running. Specific examples of these areas are discussed in this section.

DETAILS: To answer the first research question, I analyzed the data to see how libraries responded initially to a disaster and what steps they took to get operational and start serving their community after a disaster. For example, after mass shootings in Dallas, the librarians began

reading books about race to help them understand how they could better serve their communities (Cottrell 2015). This was not a specific service the library provided; rather, it was an action the library took to help them understand issues of race in America and give them some **skills** for how to work with the community and tools for what to do next. It also helped them consider how librarians can plan programming or provide culturally competent services.

Many of the immediate actions taking place immediately after a crisis revolved around communicating with staff and organizing volunteers. In many cases, **infrastructure** such as communication systems was down or damaged, making this more difficult. Many of the libraries mentioned trying to find staff phone numbers or emails, which was complicated by local servers being non-operational. Librarians also attempted to find potential volunteers' names to distribute them to organizations in need (Will 2008).

A different type of disaster, the opioid epidemic, demonstrated that libraries were also ready to spring into action. Some libraries began training their security staff to use naloxone, the opioid-overdose reversal drug (Miller 2018). “In Philadelphia, four overdoses in one year spurred the McPherson Branch of the Free Public Library staff to take action. They proactively sought **skills** and training on anti-overdose medication and learned how to administer it. They conduct overdose drills, so they are prepared for incidents” (Pundask 2017, Para. 2). The library also reconsidered bathroom policies and monitoring the bathrooms to help prevent overdoses and to have a quicker response to an overdose.

There were many examples of people wanting to help during a disaster but not knowing exactly what to do. For instance, after Hurricane Katrina, an LSU MLIS student was working in a shelter when a person near her had a major headache. As she approached the doctor's station, she saw a *Physician’s Desk Reference*. For her, “it was a lightbulb moment, and I asked the

doctor if he needed any other medical reference books. His face lit up, and he quickly gave me four titles: the Merck Manual and the Washington Manuals of medicine, pediatrics, and surgery" (Fletcher 2006, p. 12). The librarians tended to see problems and respond immediately. Another example of librarians springing into action after Hurricane Katrina is Rebecca Hamilton, the State Librarian of Louisiana at that time:

> Hamilton and her staff got to work immediately, creating and hosting a website of resources for evacuees, setting up a donation account through the Louisiana Library Foundation to accept contributions on behalf of damaged public libraries, coordinating computer and book donations from fellow state librarians, and staying in close contact with public libraries across her state to coordinate assistance based on specific needs. (Dankowski, 2015, para. 3).

These demonstrate some of the steps necessary to get the libraries back up and running so that they were able to serve their communities.

Libraries were able to take action by being flexible and creative. Some libraries changed their hours or policies, such as allowing people in the library to use computers whether or not they had library cards. Often there were examples of libraries shifting programs such as adjusting children's programs to focus on themes like overcoming fears. Some libraries also took action before disasters happened. For example, the director of the Santa Cruz Public Libraries as part of the city emergency team and built community information needs into the city's plan (Will 2001). These are wonderful examples of being **flexible**, creative, and proactive in changing how libraries interact with their communities before or after an event.

To me, one of the more striking revelations from the data was how **flexible** and selfless the librarians were. In almost every disaster type, there were examples of librarians losing their homes but still showing up to work. After the tornado in Joplin, Missouri, the library director reported that several members showed up to work despite losing their homes and one even with a broken arm (Goldberg 2011). There were many examples of how dedicated the librarians were in

the data. Despite their personal loses, they often showed up to continue to work and be there for their community.

The data also indicated that working through the disaster helped the librarians recover. For example, after a hurricane, one librarian said, “It feels good to be able to help. I almost forgot that I was one of the victims too. I would go home and look at the cabinets and say, ‘Damn. I don’t have any food!’” (QPLSM 2012, Para. 13). In another example, the librarians found out that a regular patron lost their home, and they pooled their resources together to give her money to stay in a hotel.

5.2.2.2 Research Question 2: Services

The second research question was: **What services have public libraries provided to their communities during and after extreme events?** Libraries are traditionally known for the services they provide to their communities, so one of the research questions looks specifically at services. To answer this question, I looked for data that demonstrated how the libraries served their communities after a disaster. The services libraries provided were very similar to those offered on a "blue sky day," but in times of crisis, these services proved even more critical. This section discusses services specifically related to the disaster (*See Fig. 5.2*).

Table 5.1: Disaster-Related Library Services after Disasters

Economic Development	Helped Patrons fill out insurance/FEMA forms Ran Small Business Association (*SBA*) workshops Hosted free financial planning seminars
Information and Communication	Provided infrastructure such as power, Wi-Fi hubs, internet access, laptops, and computers Updated emergency response networks and crisis mapping applications Created LibGuides about disasters Provided trusted information about needed resources such as food, shelter, and transportation

The evidence shows that after disasters, libraries were more likely to provide outreach services. There were several examples of libraries meeting their communities where they were. For instance, after mudslides, the libraries in that community set up a mobile book trailer and delivered books to nearby communities where the roads were making travel difficult.

Except for the library staff themselves, the number one service the libraries provided was information **infrastructure**: power, Wi-Fi hubs, internet access, laptops, and computers. FEMA forms must be filled out online, and for communities without power or internet access, this was impossible. Often, the libraries were ready to step up and provided this service. The libraries not only gave access to the information, but they offered a **trusted information** service by helping citizens fill out forms and work through the complicated process of applying for FEMA funds.

Libraries also provided critical, **trusted information** about free resources –shelters, food banks, and emergency procedures. (Morris 2017). Some libraries took it upon themselves to update information on Twitter, emergency response networks, crisis mapping applications, and even on LibGuides. Not only did libraries provide information about disaster resources, but often they distributed donated resources. Libraries gave out bottled water, diapers, food, batteries, sympathy, fellowship, and even distributed thousands of warm coats (QPLSM 2012). Several libraries influenced **economic development** by providing **resources** such as free financial planning seminars for victims, including the Small Business Association (SBA) or FEMA workshops, helping community members recover financially from disasters.

In addition to the community needing to access the internet to use e-government and other disaster information related services, it also required to provide personal assistance. For example, libraries provided the means for people to reconnect with their family and friends. A service mentioned quite a bit in the documents analyzed were the services that provided

entertainment. Storytimes, watching movies, and other programming helped communities take a break and forget about the disaster, if only for a little while. This was especially true for children and teens in the community.

Though most of the data in the content analysis pointed to outreach services, there were also examples of support via technical services. For example, Morris (2017) suggests libraries without collections addressing disasters, and other kinds of crises should consider adding books and other media on preparing for and coping with disasters appropriate for all ages. Many libraries also worked to archive disaster experiences to make sure future generations would understand what happened in their community.

5.2.2.3 Research Question 3: Roles

The final question answered in this phase of the dissertation was: **What roles have public libraries played in their communities during and after extreme events?** The data demonstrated that the roles libraries played included collection managers, information disseminators; internal planners; community centers and supporters; government partners, educators, and trainers; lifesavers and shelters (*See Table 5.2*).

Table 5.2 Roles Public libraries played after disasters

Roles	**Examples from Content Analysis**
Collection Managers	Ford 2017; Dankowski 2015; Oder 2008; Spear 2012; Weiss 2012; Yee 2012
Information Disseminators	Corbray 2017; Ramos 2016; Featherstone 2012; Langford et al. 2013; Long 2006; Oder 2008; Wilson 2013
Internal Planners	Blinder 2017; Barger 2015
Community centers and supporters	Blinder 2017; Peet 2016; Berry 2015; MBLC 2008; NYPL 2001; QCPL 2012; Will 2001; Zavalick 2012
Government Partners	Ramos 2016; Bardyn 2015; Barger 2015; Brobst et al. 2012; Chant 2013; Goldberg 2011
Educators and Trainers	Garcia-Febo et al. 2016; Berry 2015; Bishop et al. 2011; Rasmussen 2005; Weiss 2012
Lifesavers	Pundsack 2017; Fletcher 2006; Gilbert 2008
Shelters	Bauman 2013; Gazette 2012; Kramer 2012; Love et al. 2014; Orel 2012

Public libraries played the role of collection managers throughout disasters. Some libraries revamped their collections to cater to new populations (Oder 2008). Other libraries expanded their collections to include materials helping communities to heal emotionally after disasters (Ford 2017; Spear 2012). Libraries also worked to collect resources and materials about disasters for children (Weiss 2012; Yee 2012).

Throughout time, libraries have disseminated the information, so it is not a great surprise that this is one of the vital roles that libraries played after disasters. Beyond providing information all of the information they usually offered to their patrons, some librarians worked diligently to update crisis maps and other online resources related explicitly to the current disaster (Corbray 2017; Love 2006).

There were several examples of libraries adjusting to provide better services. After the police shootings in Dallas, librarians, there worked to help educate themselves on race relations and considered what they needed to work on internally to help better serve their communities (Blinder 2017). Barger (2015) wrote about the importance of the role of internal planners for the library community. Internal planning refers to the work that organizations undertake to organize services, resources, and workers to better provide for their community. Barger argues libraries must have a plan to respond effectively to disasters.

The data analyzed showed that most libraries assumed roles as community centers and supporters (Blinder 2017; Peet 2016; Berry 2015; MBLC 2008; NYPL 2001; QCPL 2012; Will 2001; Zavalick 2012). Some libraries offered their space to allow communities to gather together. Other libraries acted as de facto therapy services, with librarians debriefing with community members about the disasters, and helping them with processing the trauma.

There were many instances of libraries working with the government as a partner (Ramos 2016; Bardyn 2015; Barger 2015; Brobst et al. 2012; Chant 2013; Goldberg 2011). Libraries worked with local, state, and federal organizations as well as local community organizations, including churches and nonprofits. For example, The Far Rockaway branch collaborated with the Joseph Addabbo Family Health Centers to "provide programs on disaster-related health issues such as post-traumatic stress order" (QPLSM 2012, Para. 7).

Public libraries also played roles as educators and training centers. Garcia-Febo et al. (2016) argued for the importance of library services during disasters, specifically for immigrant communities experiencing language and culture barriers. After riots in Ferguson, the public library stayed open and served as an educational center when many of the local schools closed down (Berry 2015). Weiss (2012) also discussed the ways Colorado libraries supported youth after wildfires. For example, after the wildfires, one library provided targeted programming about fires for the children while their parents filled out FEMA forms.

After the opioid epidemic began, many public libraries started to play the role of lifesavers. Though librarians have always played a role in calling first responders in case of an emergency like a heart attack, many are now getting trained to intervene during an overdose. Many librarians learned how to give Naloxone shots to counteract an overdose (Pundsack 2017). Others mentioned the roles libraries played in verifying and sharing information during other health emergencies (Fletcher 2006; Gilbert 2008).

Libraries are also acting as shelters to their communities. After Superstorm Sandy, libraries along the east coast served as shelters for victims of the hurricane (Bauman 2013; Kramer 2012). Other examples included libraries acting as warming or cooling centers (Gazette

2012). In addition to providing shelter, many libraries served as a refuge by being open, clean, and providing light and power when many of their patrons were without it (Orel 2012).

5.3 PHASE 2: INTERVIEWS

5.3.1 *Data Collection*

For the second phase of the dissertation, I interviewed seven librarians and six disaster response agents. As explained in Chapter 4, the librarians were recruited through people I knew personally and through social media. The librarians interviewed were library directors, assistant directors, or branch managers. The disaster response agents were recruited through an emergency management listserv and people I knew personally. The disaster response agents held positions such as emergency preparedness coordinators, directors of response and rescue, and head of a county emergency response team.

All of the interviews were conducted and recorded either on the phone or through Zoom without cameras, so the video of the participants was not collected. The interviews lasted between 20 and 40 minutes. I transcribed most of the interviews myself except two that were sent to an online transcribing company. The goal of this phase of the research was to answer research questions four and five, which are:

- **How do public library directors/managers think public libraries enhance community resilience and build adaptive capacities?**
- **How do disaster responders think public libraries enhance community resilience and build adaptive capacities?**

5.4 Research Question 4: Library Directors and Community Resilience

To understand how public library directions/managers think public libraries enhance community resilience and build adaptive capacities, I used the four primary adaptive capacities identified in the community resilience theory: economic development, social capital, information and communication, and community competence. The data demonstrates public libraries were able to enhance community resilience in all four adaptive capacities.

5.4.1 *Economic Development*

Two areas related to economic development appeared in the interview data: economic resources and fairness of risk. Libraries were able to enhance the **economic resources** in the community in three significant ways. First, every library director mentioned their staff helped community members fill out FEMA forms. Though not explicitly mentioned in the data, the potential result of filling out these forms is both disaster assistance funds and access to temporary food stamps. Second, most of the library directors mentioned the community using computers and internet access to fill out and submit insurance claims. Third, three libraries said hosting Small Business Association (SBA) workshops and training for how to fill out forms to receive help from the government to get local businesses operational again.

The concept of the **fairness of risk** has to do with economic disparities already existing in communities before a disaster strikes. In communities experiencing economic disparity, often, infrastructure is older, making it more vulnerable during disasters. Newer buildings are built according to building safety codes, making them more resilient in the face of disasters. One library director mentioned their library being “vulnerable because of its lower elevation" (Librarian 5 Transcript). During the second interview, the library director said their building had recently been renovated and that it "actually experienced the least amount of damage of any

municipal building" (Librarian 2 Transcript) enabling the library to respond immediately to its community and form partnerships with other government organizations to allowing them a safe space to operate.

5.4.2 *Social Capital*

5.4.2.1 **Attachment to Place** and **Sense of Community**

Attachment to place and **sense of community** were mentioned in every interview. Every library director said that in addition to the resources and services provided by the library, there was solace in sharing space. Community members demonstrated their **sense of community**, showing loyalty to their neighborhoods. Members of the community returned to the library because of their relationship to the place and the people inside. People came to the library to be with their community and as part of the healing process:

"just being there for our community and providing just a tiny bit of normalcy" (Librarian 5 Transcript). Library Director 3 agreed with this, "I think it just helped them to be around each other. So I also think to provide space just kinda to be" (Librarian 3 Transcript).

Most of the directors also indicated though people seemed to come to the library to use specific information resources, the appreciation of space was a bonus. "They came to use computers, but they also came to talk and sometimes even to cry. It was overwhelming, and we wanted our community to know that we cared about them. Not just about providing information services but that we cared about them as individuals" (Librarian 5 Transcript).

Many library directors mentioned it was important for the libraries to be open because, in many instances, people had nowhere else to go. Library Director 2 said, "we had an immediate response from the municipalities' upper echelon that we were to remain open the very next day, which was good … because they had no other place to go in a lot of cases to get information

about what was going on or to locate assistance" (Librarian 2 Transcript). Other library directors echoed this sentiment. "We were in the center of town and positioned to make a difference in our community. I think by being open, some people just wanted to be there to build back their sense of community" (Librarian 6 Transcript).

Multiple library directors mentioned that in addition to using the space to rebuild a **sense of community**, people also used this space because it was considered safe. "Some of our buildings acted as shelters, and other buildings were repurposed as an assistance center" (Librarian 6 Transcript). Agreeing with this, Library Director 6 reported, being a "safe place to shelter" for people to "get local information or just seek a little refuge" (Library 6 Transcript).

After disasters, libraries played an essential role in helping communities rebuild their sense of community by providing a place for the community to be. "I think that just that general community center connection was massive, that people had a place to come together and see each other, and just step out of everything else for a little while" (Library Director 1Transcript). Going further, Library Director 1 stated:

> I feel like in a kind of more esoteric kind of the way; it was just the community. Everything that reopened, every new point of interpersonal connection was a small victory for everybody that participated in it. I think that there was just some general emotional uplifting that was happening because people had something that was there again. They would come in and just want to talk to people. Everyone was so kind of separated from each other and so caught up in their stuff that I think that it was nice just to have a place to be. (Librarian 1 Transcript).

5.4.2.2 Organizational links/cooperation

The library directors provided a great deal of evidence about working and cooperating with other organizations to help enhance community resilience. All of them agreed, "librarians can work with their communities and governments to provide better services" (Librarian Director 5 Transcript). Library directors mentioned several organizations they worked with including

“**organizations** like churches, the Salvation Army, the Red Cross, FEMA” (Librarian Director 5 Transcript) and, “definitely local responders, firefighters, human service agencies, nonprofits, state organizations; I think we worked with as many groups as possible” (Librarian Director 6 Transcript). One library director mentioned working with minor league baseball teams who “donated around 2000 tickets to the game to help us through a community night after things had settled down a bit. We previously worked with the baseball team, so I think that made this project work even smoother” (Librarian Director7 Transcript).

Not all attempts to work with others were immediately seen as valuable. For example, “When I first offered to help, I don’t think the emergency management people were interested. It's like they couldn't understand how BOOKS would help. They had no clue about all of the resources that we have and all of the different services we provided” (Librarian 7 Transcript).

5.4.2.3 Social Networks

Two of the library directors mentioned having relationships with other members of the government, allowing partnerships to happen organically. Another librarian and the emergency manager in her county worked together in workshops and training and had clear directives for how to help and respond in a crisis. “I would say that relationships are essential. I think our project was so successful because our director already had such a good relationship with the mayor. She was able to reach out, even when everything was pretty chaotic, and instantly got the go-ahead to start. I think it was also good that the staff had some training beforehand. I think that helped us understand roles and how we could help. It, well, we was prepared (Librarian 4 Transcript).

Maybe the most revealing aspect of social networks in this research is the importance of those relationships to be established before an event takes place. "I think it is important that we

position ourselves as trusted parts of our community before something happens; this means making sure the public knows the types of services we provide. But not just the libraries, also the EM people. I don't think they took us seriously until we started to provide service" (Librarian Transcript 7). This points to make sure the emergency management people are aware of what libraries can do.

5.4.3 *Information and Communication*

It is no surprise that libraries were significantly able to enhance community resilience in the area of information and communication. Information and communication are critical during disasters. For libraries, this is our concern all the time. Immediately after a disaster, one of the first things people need to be able to do is to "communicate with loved ones" (Librarian 5 Transcript). Many libraries even functioned as an information assistance center (Librarian 6 Transcript). "Our key role was providing internet and information services," explained Library Director 7, "and I think delivering books and DVDs were also very appreciated" (Librarian 7 Transcript). This section discusses the codes from the Information and Communication section of the theory: **information needs, information infrastructure**, **narratives**, **responsible media**, and **trusted sources of information.**

5.4.3.1 Information Needs

Regardless of the type of disaster, the community members had many of the same information needs. The most highly mentioned needs were to be able to fill out a FEMA form and to reach the outside world. "Our very first priority was to make sure the community could connect again with the outside world" (Librarian 7 Transcript). People also wanted to be able to research about other available resources. For example, "people needed to know how to identify

mold and what to do with damaged items, and I don't think most of us knew much about that at all" (Librarian 5 Transcript).

5.4.3.2 Infrastructure

Information and communication infrastructure is ubiquitous and a necessary component of modern life. Every library director mentioned the importance of providing information and communication infrastructure for their community members to use. For example, one director stated that "setting up internet access and laptops were vital" (Librarian 5 Transcript). Immediately after a disaster, the same library director described this process: "We were able to get tents, and tables, computers, and Wi-Fi capabilities, and I think our community desperately needed this" (Librarian 5 Transcript). Many libraries also provided this type of service and, in some cases, even boosted their signal so it could be used in a much larger area than just the temporary library building. For example, one library director noted: "the great thing was that the signal could reach the parking lot so people could come, and did, use the Wi-Fi after hours when the library building itself was closed. After a week or so, we also got a larger antenna that was able to provide the internet for quite a few blocks" (Librarian 7 Transcript).

Libraries also used book trucks and mobile services to help support infrastructure after disasters. One library director set up a "mobile satellite that would provide access to the internet" (Librarian 5 Transcript). "We had large trucks in our system, and these were stationed near different ends of the disaster so that the rescuers could store any type of valuables they found during the recovery" (Librarian 7 Transcript). Library Director 1 discussed this experience at length:

> I think the most prominent role we played had the FEMA station open at the library, which was great, at the main library, because it gave people somewhere to go. It was really heavily utilized in that way, but also, I think the most significant role the smaller branches played was just being computer access points. The regional branch had

> gotten destroyed in the storm from rain damage actually, no flooding, but we got a few trailers that had been at one of the rural areas that people were staying in trailer parks having left their homes. We got a trailer from them in June of that year. It was set up as a library, but basically, it was just computers. It was set up in the parking lot at the regional branch so that people had somewhere to come to get online, file claims, do all those things that they couldn't do at home for various, or not having homes, or whatever. I think that really being able to connect with insurance companies and FEMA and all those things were probably one of the most significant roles we played at that point. It was more about being connected to the outside world than it was about typical, traditional library services. Some people were still coming in just to get books and relax in the middle, but mostly it was about providing services of connectivity (Librarian 1 Transcript).

5.4.3.3 Narratives

Narratives tell the stories of the community after a disaster and preserve the experiences of the community for those in the future. Though narratives did not appear too often during the interviews, they did appear several times in the content analysis, especially in events like shootings and the opioid epidemic. During this phase of the research, one assistant library director mentioned the library working on a memorial for the flooding happening in their city. "The director reached out to the mayor, and they [sic] wanted to start a type of memorial. I mean, you always hear about the 100-year flood, this was like the 1000-year flood. So, almost immediately, we started collecting memorabilia, documents from businesses, pictures that people were taking. We even had people come in and record their experiences" (Librarian 4 Transcript). Not only did they have community members record their experiences, but they also encouraged local celebrities to participate: *"*I think one of the cool things we did was have local musicians come in and talk about their experiences. We were all, pretty much, in the same boat" (Librarian 4 Transcript). Narratives are an essential part of the disaster experience. "I guess I would have to say that documenting and memorializing this type of experience helps the community heal in the

long-term and helps give context to those who didn't experience it. Yeah. I think providing the archive and its educational value. It was healing." (Librarian 4 Transcript)

5.4.3.4 Responsible Media

Responsible media in the community resilience literature points to media coverage containing information that a community experiencing a disaster can use to make decisions. Often national media coverage runs frightening images repeatedly and does not provide information that will accurately keep communities safe or help them recover. "Media was slow about reporting the floods, and it was at the same time as an oil spill, and it seemed like the national news was only covering that" (Librarian 4 Transcript). After disasters, people turned to libraries to make sure the information they got was both credible and actionable.

According to Library Director 2, the local and federal governments did not do a great job of keeping the community informed. The library was responsible for "keep people informed in like where they could go if they needed assistance. Keep them updated on what was happening with the municipality as well as what was happening with the schools, too, which was difficult" (Library Transcript 2). Sometimes the reason for lack of communication can be blamed on lack of infrastructure, but in this case, it was because "there was a lot of siloing that was revealed, I think it was bad communications. That was something that was really hard to deal with. We had to run around and try to make these connections for people" (Librarian Transcript 2).

Even communication from the federal government was slow at times. For months after an earthquake, FEMA still did not have offices set up locally. Poor communication and uncertainly are examples of irresponsible media, for example:

> There's been a lot of mix up and confusion over where the FEMA offices were going to be located. Initially, they were going to locate a FEMA Office in the main library for the city here. Then they decided instead to move it to this mall structure that the University has. It's a little difficult for people that know where to go. Even staff for the entire library

> system were like, "We don't know. Where are supposed to send people?" They do have like an office now that they've opened up within the library, but it's smaller, and it's very short term. (Librarian Transcript 2).

Responsible media helps ensure community members know where to go for safety and resources.

5.4.3.5 Trusted Source of Information

Public libraries are often pillars in their communities, and many of the library directors mentioned the importance of libraries in their communities. Simply put, "libraries are trusted" (Librarian 5 Transcript). “I think it’s important that we position ourselves as trusted parts of our community before something happens, this means making sure the public knows the types of services we provide” (Librarian 7 Transcript). Frequent users of the library were present in the library after disasters, and surprisingly, new users came to the library after the disaster. *“*Even people that didn’t typically use the library were coming to use the library. That was pretty exciting” (Librarian 5 Transcript). Library Director 2 also shared this opinion, “we had people that were coming in that would never have come to our branch at all. We found people that were just like, ‘I'm just hanging out because it's a place that's open and safe for right now.’ That was apparent that very first week after the earthquake” (Librarian 2 Transcript). Simply put, *“*People trusted us” (Librarian 6 Transcript).

5.4.4 *Community Competence*

In the context of the community resilience framework, community competence is about the organized action of communities and institutions and their ability to make decisions and improve communities. Several aspects of community competence appeared in the data, including flexibility and creativity, reflections, and problem-solving.

Many of the library directors talked about the selflessness of their librarians and their dedication to keeping the libraries open. “Even though almost all of our staff lived in homes that

were flooded, everyone showed up to work. We all wanted to do something. In the first few days before we had power, we still reported because it was better than just sitting home in the dark and not knowing what to do with yourself" (Librarian 5 Transcript). Along those lines, another director mentioned, "even though the message had gone out that staff didn't have to show up on that day, all of my staff actually did show up, and we were really fortunate enough not to be closed at all the next day, which all the other libraries were closed for multiple days after that" (Library Director 2 Transcript). One director even joked a bit about the dedication of her staff, "People came in and worked, even though some of them had lost their own homes. I was kinda blown away (laughing) Ummm…I guess I shouldn't have said that" (Librarian 3 Transcript).

5.4.4.1 Flexibility/Creativity

Many library directors demonstrated creativity and flexibility with how they responded to disasters. Even when they did not have plans, they were still able to react because of it: "(we didn't have a plan), but you know what? That didn't really stop us (Librarian 5 Transcript). Immediately after a disaster, the library directors "started to brainstorm ways that the library system could help" (Librarian 7 Transcript).

Libraries were **flexible** about policies, services, hours, and fines. "One of the important things that we did was to shift our hours so that we could extend the time the library was open" (Librarian 7 Transcript). Some libraries "offered extra delivery services to the areas directly outside of the damaged area" (Librarian 7 Transcript). "We also need to be flexible, not sending out overdue notices, erasing fines, all helped our community as well. We also let people use the library, which was from our county. During the crisis, our library was open for everyone, and I think that's what we should all focus on" (Librarian 6 Transcript). Finally, being flexible allowed libraries to continue serving their communities: "I think being flexible and creative helped us

serve our community. The staff thought outside the box and was able to improvise service" (Librarian 7 Transcript).

5.4.4.2 Reflection/Problem Solving

One of the most common reflections made by the Library Directors was that many of the libraries did not have disaster plans in place. Though this did not stop them from responding, it certainly delayed and hindered an organized response. "We had no training, no plan. There were no plans for any kind of disaster, hurricane-related or not at that time" (Librarian 1Transcript). Library Director 7 said, "I think we could have been even more useful if we had training. We learned a bunch from this experience, but I think that at least one person in the county system should be in charge of understanding and working with organizations to help plan for a response" (Librarian 7 Transcript). Library Director 3 spoke about this at length:

> Gosh. Well, to be honest, I don't think we really had a plan. I mean, there was a binder, and there was information in it about what to do if there was a fire or some internal problem like that but not anything specific. I guess we have tornadoes and warnings all the time, so we all just kinda know what to do. I didn't really have any training. I mean, I took some classes in admin and management, and I think we talked about disaster stuff, but I think it was focused on preserving books and stuff like that, ya know. I wish I knew more about communicating after a disaster, like how to get a hold of staff. I had a lot of people's personal numbers, but there were a few that I didn't. That's definitely something I've changed.

Many librarians also mentioned the importance of having a disaster plan for the library and also to work with local agencies to make the response more effective. "I'm trying to think. I guess, yeah, I think just having a plan and being prepared for what to do in the immediate aftermath, and how to get out what your needs are" (Librarian 1 Transcript). Going further, "partnering with local government agencies, and emergency management personnel to help make new disaster plans that consider the role the library can play" (Librarian 5 Transcript).

Several library directors mentioned the stress and the experiences of the staff as a thing to consider. Many staff in these situations also lost their homes or were under tremendous amounts of stress. Library Director 2 spoke about this at length:

> On the other hand, my staff was really under stress because they had no opportunity to catch up with what was happening with their own homes, which means their own houses might have been unstable. One person's house was really hit hard (sic) break itself, that we were dealing with a lot of the stressors as well. The first week after the earthquake, we had displaced employees as well. Some of them worked part-time, and so, their hours were not able to be fulfilled properly. It was very unusual, I think, and not very emotionally supportive that we have this pay structure that required people to continue showing up to work when there was no place for them to work. They're scrambling around trying to figure this out, and then getting responses from human resources and payroll saying like, "If you don't fulfill these hours, you're going to be cut essentially." I mean, it wasn't quite as severe as that, but there was that tone to it.

5.5 Research Question 5: Disaster Response Agents and Community Resilience

The final research question in this dissertation is: **How do disaster responders think public libraries enhance community resilience and build adaptive capacities?** Sadly, though not surprisingly, the overwhelming answer was that they do not think about public libraries and the roles they play during disasters.

Out of the six disaster response agents interviewed, only one of them mentioned working with libraries without prompting. “Libraries have always filled the role of a trusted information source...Libraries are not just places with information but are social and activity centers where the community can come and work with new technologies” (DRA 2 transcript). While this was only one data point out of six, this experience suggests a positive relationship between libraries and community resilience.

One agent, while discussing partnerships with community organizations, mentioned libraries provided some resources but still did not think about them as part of an overall emergency response plan. When mentioning partnerships, he remarked,

> state and local emergency responders, other agencies within the county government, the medical reserve corps, the local health department...let's see who else. Of course, local community organizations like churches or whatnot. The red cross. (Beth: how about the local library) Hmm…I'm not…yeah. We did work with them. Let's see, I can't exactly remember, but I know they lent us some resources like a truck or two. And, I know several organizations used the library as a kind of satellite office. Yeah, I think that's it" (DRA 6 Transcript).

Four of the agents interviewed did not mention public libraries at all. The implications here are essential. The disaster response agents talked quickly about collaboration and emergency response, but libraries were seldom mentioned as collaborators.

I did not use this as an opportunity to educate the Disaster Response Agents about the potential role of libraries because I was more interested in what agencies they thought about when considering different agencies' roles in building community resilience. The agencies most often mentioned included utility companies, charity organizations such as the Red Cross or the Salvation Army, and other various government agencies.

This dissertation provides evidence of the many ways libraries strengthen their communities and help them rebuild. Still, for the most part, those in charge of preparedness plans overlooked libraries as a potential resource. Libraries must do a better job of making sure people are aware of the roles they can play. One possible way to increase awareness would be to have training and workshops geared towards whole community planning bringing librarians and those responsible for disaster response together so libraries can understand emergency response on a large scale, and responders can understand how libraries can help.

5.6 CONCLUSION

When disasters strike, public libraries jump into action. Directors of libraries first worked to contact staff and check on the status of their buildings. Next, typically, the libraries gathered supplies and resources that would be necessary to have the library operational. After the library's staff and resources were ready, they would begin to provide services again to their communities.

While disaster response agents did not often mention ways public libraries enhance community resilience, two agents did mention the specific ways libraries worked to strengthen their community's resilience, such as by sharing infrastructure. Library directors discussed ways libraries enhanced their communities, especially in the areas of information and communication, social capital, and community competence. **Economic Development** was mentioned to a lesser extent, but almost every one of them said assisting in helping fill out FEMA forms, which certainly could lead to financial resources.

Chapter 6. DISCUSSION AND FUTURE DIRECTIONS

This dissertation reported on the numerous actions, services, and roles that public libraries have played throughout extreme events in the United States. The research questions asked: What actions have public libraries taken during and after extreme events to support their communities? What services have public libraries provided to their communities during and after extreme events? What roles have public libraries played in their communities during and after extreme events? This study also asked the questions: How do public library directors/managers think public libraries enhance community resilience and build adaptive capacities? How do disaster responders think public libraries strengthen community resilience and build adaptive capacities?

A multiple method approach was used in this research: content analysis of documents in the Disaster Information Management and Resource Center (*DIMRC*) database and second, semi-structured interviews held with library managers/directors and disaster response agents. Data were analyzed to understand the actions and roles played by public libraries, and services they provided throughout disasters, as well as how public libraries enhanced community resilience.

6.1 FINDINGS HIGHLIGHTS

- Many libraries did not have disaster plans in place when disasters happened.
- The actions of libraries often shifted when faced with a disaster: hours of operation, policies about computer use, and changes in patron privileges.
- Some services libraries provided were similar to pre-disaster services such as collection development, storytime, access to computers, and the Internet. However, in many cases, new services were provided: filling out FEMA forms, collaborating with

other organizations to provide communities with resources and supplies, and providing disaster prep programming.

- The roles libraries played were: institutional supporters, collection managers; information disseminators; internal planners; community supporters, government partners, educators and trainers; and, information community builders.
- Every library director mentioned the value of not just the technology and materials and core services, the library provided but the value of the space for its community as well.
- Every library director believed public libraries added to community resilience in four areas: economic development, social capital, information and communication, and community competence.
- Only one of the disaster response agents considered the public libraries as a resource before an extreme event. Two more mentioned public libraries as a resource after the event.
- As noted in the pilot study in phase one, information needs were highly relevant in how libraries enhanced to community resilience.
- Interestingly, narratives mostly showed up in what I would term as crises rather than disasters, for example, the Dallas Police Shooting, Ferguson, and the Flint, Michigan Water crisis.

6.2 Discussion of the Findings

Many libraries did not have disaster plans in place when disasters occurred. Those that did mostly had plans for small incidents such as fires, localized flooding, or active shooters. It was clear from both the content analysis and the interviews that libraries have considered

disasters from a localized point of view. That is, they think about how to respond to smaller, localized incidents but often fall short of planning for more extensive, extreme events. This result indicates the importance of directors of libraries expanding their emergency response plans to include plans for more widespread disruption and to incorporate plans for their business continuity.

The actions of libraries often shifted when faced with a disaster: hours of operation, policies about computer use, and changes in patron privileges. Regardless of the disaster, libraries responded by changing their policies to be responsive to their communities. The policies of libraries were flexible, responding to community needs at those moments. For example, before disasters, time on public computers was often limited. This policy was often not enforced or was amended after a disaster to give patrons the time they needed to fill out FEMA forms. There were also many examples of libraries changing their operating hours to serve their communities better. Going forward, library directors should be mindful of the changing information needs after a disaster and make adjustments to policies as needed.

Many services libraries provided during disaster events were the same as pre-disaster services, including collection development, storytime, access to computers, and the Internet. These services continued to make up a substantial part of what libraries did for their communities after a crisis. In many cases, new services emerged. Organizing Small Business Association (SBA) workshops, helping patrons fill out FEMA forms, collaborating with other organizations to provide communities with resources and supplies, and providing disaster prep programming, were services that emerged after a disaster. Given these results, library directors consider these emerging services after a disaster and have backup plans for new services. Library directors can participate in free training sponsored by both FEMA and the SBA to help them

consider the needs of a community after a disaster. Understanding the shifting community needs will help directors prioritize services in the case of an extreme event as well as develop more robust plans for future disasters.

The roles libraries played in disaster events were: institutional supporters, collection managers; information disseminators; internal planners; community supporters, government partners, educators and trainers; and, information community builders. These identifiable roles were corroborated by both the content analysis and the interviews. Library directors should adequately prepare for how to play each of these roles in their communities.

Every library director mentioned the value of not just the technology and materials the library provided but the value of the space for its community as well. While technology infrastructure and access were critical for their communities, the space libraries provided was as well. It is vital libraries open to the public as quickly as possible. Library directors should be aware they can apply for FEMA funding for temporary spaces, which will help them return to providing services as soon as possible even in the case of a catastrophe.

Every library director believed public libraries added to community resilience in four areas: economic development, social capital, information and communication, and community competence. It was clear the library directors were utterly convinced about how libraries helped support their community throughout disasters. This understanding needs to be expanded to planning. Since library directors understand libraries enhance community resilience, directors should take a more active role in planning for disaster response in their communities. Additionally, directors need to continue to make compelling cases about the roles of libraries throughout disaster and market these critical roles to our community in a more meaningful way.

Only one of the disaster response agents considered the public libraries as a resource before an extreme event. Two more mentioned public libraries as a resource after the event. We must discuss the critical services of libraries outside of the library world. Even with the FEMA designation of public libraries as critical infrastructure, many disaster response agents did not understand the roles libraries can play. I believe this is partly due to the library and information science world not educating the public about our services and not advocating for a designated role in disaster response.

As noted in the pilot study in phase one, information needs were highly relevant in how libraries added to community resilience. This will be discussed more in the next section, but it is essential to note this theory came from the social sciences and that the theorists were not experts in information behavior theory. This means more work is needed to help theoretically articulate the relevance of information and communication during disasters.

6.3 Suggestions for Future Directions

My goals are to extend this work in three different domains: theoretical, practical, and empirical. The next sections will discuss each of these domains further.

6.3.1 *Future Directions: Theoretical*

In moving forward theoretically, I believe it is crucial to extend the theory of community resilience to include more information behavior theory and terminology. Although Norris, et al. (2007) describe information and communication as critical to community resilience, their conceptualization of these elements are limited. They include **responsible media**, **narratives**, **skills**, **infrastructure**, and **trusted sources of information** as critical components to information and communication. One new code that emerged during the pilot, which was added

to the coding scheme, was **information needs**. Though the concept of information needs was not mentioned as a vital aspect of the community resilience theory, its importance became evident in how frequently the documents or interviews explicitly mentioned or referred to information needs. This result reflects a need to add more information behavior theory to this theoretical framework.

More generally, the field of information behavior could use more theorizing about information during disasters. It was surprising to have to reach outside of the library and information science literature to find a consistent theoretical framework. Theories about information behavior during disaster events and community information needs during disasters are both areas that need conceptual development.

6.3.2 *Future Directions: Practical*

There is a disconnect between how librarians and disaster response agents view the role of libraries in enhancing community resilience. As noted above, librarians need training to understand what libraries can do after emergencies. They also need to be empowered to work with their local governments to help with the planning stages for disaster response. It is also critical that emergency management personnel are aware of libraries as essential community organizations and be willing to work with them. I propose planning joint workshops of EM planners and librarians to for each to fully understand the roles both play and may play during disasters. ‘

It would also be a good idea to create lectures, courses, webinars, and workshops around the roles of libraries during disasters in MLIS programs. Expanding risk management and

response courses to focus on educational institutions such as libraries is also critical. Directors of libraries and librarians should have a general understanding of community needs during a crisis.

6.3.3 *Future Directions: Empirical*

Finally, though there is a quantitative measure of community resilience, it does not include indicators for two of its significant elements: Information and Communication and Community Competence. Research is needed to establish quantitative indicators for measuring information and communication and community competence as laid out by the community resilience framework. A next step would be to suggest specific indicators of these two elements to have a full community resilience quantitative measure. After identifying the particular indicators, more research will be needed to test these indicators.

Other research is needed to:

- Understand specific information needs after a disaster.
- Identify what roles other types of libraries play in regards to disaster response.
- Develop a community resilience index to measure resilience at both the state and the local community levels.
- Understand the use of technology during disasters.

6.4 CONCLUSION

This dissertation demonstrates that public libraries are essential and trusted organizations in our community in terms of helping respond after a disaster. Libraries take action to provide service and, as such, have become pillars of their communities and safe harbors in the storm. However, although public library directors firmly believed libraries enhance their community's resilience,

disaster response agents were not so sure. While the response agents did not outright deny or dismiss the potential for libraries to respond, they still seemed generally aware of the more important roles libraries can play after a crisis.

Hopefully, this work moves in the direction of providing disaster response agents and emergency management teams with a variety of reasons to reach out to and work with their local public libraries. More research is necessary to identify ways that public libraries contribute to the adaptive capacities of communities and to discover how libraries can better meet the critical needs of their communities when libraries are needed the most.

Experiencing Hurricane Katrina was a critical point in my career, and being a part of the rebuilding process after Hurricane Katrina taught me that my school library was not just a building and that my city was not only its infrastructure. Both consist of people dedicated to working towards similar goals. Hurricane Katrina changed the way I viewed the roles of public libraries in our communities. Even though the Holy Cross School community is small, that experience demonstrated the pivotal role that a library can play during a time of intense crisis.

BIBLIOGRAPHY

Bardyn, T. (2015). Enhancing library impact through technology. *Journal of the Medical Library Association : JMLA*, *103*(4), 222–231. https://doi.org/10.3163/1536-5050.103.4.015.

Barger, R. (2015). Creating a Readiness Culture within Pennsylvania Libraries. Retrieved April 20, 2019, from https://news.nnlm.gov/mar-newsletter/2015/02/creating-a-readiness-culture-within-pennsylvania-libraries/.

Bauman, M., & Bishop, R. (2013). Our libraries were ports in the storm. In Superstorm Sandy recovery: one year later. *New Jersey Municipalities*. Retrieved from https://www.njstatelib.org/wp-content/uploads/lss_files/League_of_Municipalities_article_0.pdf.

Bauwens, J., & Naturale, A. (2017). The Role of Social Work in the Aftermath of Disasters and Traumatic Events. *Clinical Social Work Journal*, *45*(2), 99–101. https://doi.org/10.1007/s10615-017-06238.

Bayliss, S. (2012). New York City Libraries Relatively Unscathed; New Jersey Still Taking Stock. Retrieved April 20, 2019, from http://www.libraryjournal.com/?detailStory=new-york-city-libraries-relatively-unscathed-new-jersey-still-taking-stock.

Beales, D. (2003). Before Disaster Strikes: Essentials of Formulating a Library Emergency Management Plan. Journal of Hospital Librarianship, 3(4), 11-24.Berg, B. L. (2004). *Qualitative Research Methods for the Social Sciences*. Pearson.

Berry, J. (2015). 2015 Gale/LJ Library of the Year: Ferguson Municipal Public Library, MO, Courage in Crisis. Retrieved April 20, 2019, from http://www.libraryjournal.com/?detailStory=2015-galelj-library-of-the-year-ferguson-municipal-public-library-mo-courage-in-crisis.

Bertot, J. C., Jaeger, P. T., Langa, L. A., & McClure, C. R. (2006). Public access computing and Internet access in public libraries: The role of public libraries in e-government and emergency situations. *First Monday*, *11*(9). https://doi.org/10.5210/fm.v11i9.1392.

Bertot, J., T. Jaeger, P., & Hansen, D. (2012). The Impact of Polices on Government Social Media Usage: Issues, Challenges, and Recommendations. *Government Information Quarterly - GOVT INFORM QUART*, *29*. https://doi.org/10.1016/j.giq.2011.04.004.

Beven, J. L., Avila, L. A., Blake, E. S., Brown, D. P., Franklin, J. L., Knabb, R. D., Stewart, S. R. (2008). Atlantic Hurricane Season of 2005. *Monthly Weather Review*, *136*(3), 1109–1173. https://doi.org/10.1175/2007MWR2074.1.

Bishop, B., Mandel, L., & McClure, C. (2011, March 1). Geographic Information Systems (GIS) in public library assessment. Retrieved April 20, 2019, from https://www.libres-ejournal.info/1037/.

Bishop, B. W., & Veil, S. R. (2013). Public Libraries as Post-Crisis Information Hubs. *Public Library Quarterly*, *32*(1), 33–45. https://doi.org/10.1080/01616846.2013.760390.

Blinder, A. (2017). What to Do With the Tributes After the Shooting Stops. *The New York Times*. Retrieved from https://www.nytimes.com/2017/07/07/us/dallas-police-shooting-tributes.html.

Bloomberg, L. D., & Volpe, M. F. (2008). *Completing Your Qualitative Dissertation: A Road Map From Beginning to End* (Fourth edition). Los Angeles: SAGE Publications, Inc.

Bodin, P., & Wiman, B. (2004). Resilience and Other Stability Concepts in Ecology: Notes on their Origin, Validity, and Usefulness. *ESS Bulletin*, *2*, 33–43.

Boyd, E. (2011). Adapting to global climate change: Evaluating resilience in two networked public institutions.

Brobst, J. L., Mandel, L. H., & McClure, C. R. (2012). 9 - Public libraries and crisis management: roles of public libraries in hurricane/disaster preparedness and response. In C. Hagar (Ed.), *Crisis Information Management* (pp. 155–173). Chandos Publishing. https://doi.org/10.1016/B978-1-84334-647-0.50009-6.

Brooks, N., Neil Adger, W., & Mick Kelly, P. (2005). The determinants of vulnerability and adaptive capacity at the national level and the implications for adaptation. *Global Environmental Change*, *15*(2), 151–163. https://doi.org/10.1016/j.gloenvcha.2004.12.006.

Bruneau, M., E. Chang, S., Eguchi, R., C. Lee, G., D. O'Rourke, T., Reinhorn, A., Winterfeldt, D. (2003). A Framework to Quantitatively Assess and Enhance the Seismic Resilience of Communities. *Earthquake Spectra - EARTHQ SPECTRA*, *19*. https://doi.org/10.1193/1.1623497.

Burton, I., Huq, S., Lim, B., Pilifosova, O., & Schipper, L. (2002). From Impacts Assessment to Adaptation Priorities: The Shaping of Adaptation Policy. *Climate Policy*, *2*, 145–159. https://doi.org/10.3763/cpol.2002.0217.

Buschman, J., & Leckie, G. J. (2007). *The Library as Place: History, Community, and Culture*. Libraries Unlimited.

Carpenter, A. (2015). Resilience in the social and physical realms: Lessons from the Gulf Coast. *International Journal of Disaster Risk Reduction*, *14*, 290–301. https://doi.org/10.1016/j.ijdrr.2014.09.003.

Celedón, A., Pequeño, A., Garrido, M., & Patin, B. (n.d.). *Disaster response in Chile: The critical role of libraries and telecenters. Research Brief*. Seattle: Technology & Social Change Group, University of Washington Information School.

Chandra, A., Burns, R. M., Tanielian, T., & Jaycox, L. H. (2011). Understanding the deployment experience for children and youth from military families. In *Risk and resilience in U.S. military families* (pp. 175–192). New York, NY, US: Springer Science + Business Media. https://doi.org/10.1007/978-1-4419-7064-0_9.

Chant, I. (2013). After Floods, Colorado Libraries Assess the Damage, Step in With Services. Retrieved April 20, 2019, from http://www.libraryjournal.com/?detailStory=after-floods-colorado-libraries-assess-the-damage-step-in-with-services.

Colten, C. E., & Sumpter, A. R. (2009). Social memory and resilience in New Orleans. *Natural Hazards*, *48*(3), 355–364. https://doi.org/10.1007/s11069-008-9267-x.

Corbray, K. (2017). At the Library: Looking to the library in times of crisis. Retrieved April 20, 2019, from https://www.yakimaherald.com/scene/literature/at-the-library-looking-to-the-library-in-times-of/article_e4ca11b6-dace-11e7-be03-97e5849d3c02.html.

Cottrell, L. (1976). The Competent Community. In B. Kaplan, R. Wilson, & A. Leighton, *Further Explorations in Social Psychiatry* (pp. 195–209). New York: Basic Books.

Cresswell, J. (2003). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches 5th Edition - Ebook PDF Version. Retrieved April 20, 2019, from https://elibrarycenter.com/product/research-design-qualitative-quantitative-and-mixed-methods-approaches-5th-edition-ebook-pdf-version/.

Cutter, S. L., Barnes, L., Berry, M., Burton, C., Evans, E., Tate, E., & Webb, J. (2008). A place-based model for understanding community resilience to natural disasters. *Global Environmental Change*, *18*(4), 598–606. https://doi.org/10.1016/j.gloenvcha.2008.07.013.

Cutter, S. L., & Finch, C. (2008). Temporal and spatial changes in social vulnerability to natural hazards. *Proceedings of the National Academy of Sciences*, *105*(7), 2301–2306. https://doi.org/10.1073/pnas.0710375105.

Dankowski, T. (2015). Business Continuity Over Collections Recovery. Retrieved April 20, 2019, from https://americanlibrariesmagazine.org/blogs/the-scoop/business-continuity-over-collections-recovery/.

Dayanim, S. (2013). *Examining the influence of community institutions on inner ring suburban resilience: A study in southeastern Pennsylvania*. ProQuest Dissertations Publishing. Retrieved from http://search.proquest.com/docview/1502016270/.

Denzin, N. K., & Lincoln, Y. S. (1994). *Handbook of qualitative research*. Sage Publications.

Denzin, N. K., & Lincoln, Y. S. (2003). *Collecting and Interpreting Qualitative Materials* (Fourth edition). Thousand Oaks: SAGE Publications, Inc.

Dudley, M. (2012). *Public Libraries and Resilient Cities* (1 edition). Chicago: Amer Library Assn Editions.

Dynes, R. R. (1970). *Organized Behavior in Disaster*. Heath Lexington Books.

Fearn-Banks, K. (2016). *Crisis Communications* (5 edition). New York, NY: Routledge.

Featherstone, R. M., Lyon, B. J., & Ruffin, A. B. (2008). Library roles in disaster response: an oral history project by the National Library of Medicine. *Journal of the Medical Library Association : JMLA*, *96*(4), 343–350. https://doi.org/10.3163/1536-5050.96.4.009.

FEMA. (2010). *9523.3 Provision of Temporary Relocation Facilities*. FEMA.

FEMA. (2012). 2012 National Preparedness Report | FEMA.gov. Retrieved April 20, 2019, from https://www.fema.gov/media-library/assets/documents/26675.

FEMA. (2016). 2016 National Preparedness Report | FEMA.gov. Retrieved April 20, 2019, from https://www.fema.gov/media-library/assets/documents/116951.

FEMA. (2014). Chapter 1 Introduction to Crisis, Disaster, and Risk Management Concepts. In *Emergency and Risk Management Case Studies Textbook*. Washington D.C.: FEMA.

FEMA. (2016). Disaster Types | disasterassistance.gov. Retrieved April 20, 2016, from https://www.disasterassistance.gov/information/disaster-types/overview.

Ferris, E., & Petz, D. (2011). *A Year of Living Dangerously: A Review of Natural Disasters in 2010. Project on Internal Displacement*. Washington D.C.: Brookings Project on Internal Displacement.

Fletcher, A. M. (2006). No Point of Reference. *Journal of Hospital Librarianship*, *6*(2), 1–14. https://doi.org/10.1300/J186v06n02_01.

Fujita, T. T. (1971). *Proposed characterization of tornadoes and hurricanes by area and intensity*. Retrieved from http://archive.org/details/nasa_techdoc_19720008829.

Garcia-Febo, L., Leong, J., Relander, J., & Richards, J. (2016). *Library Services to Immigrants and Refugees* (Vol. March 31).

Gilbert, C. M. (2008). Code Yellow: Library 9-1-1. *Journal of Hospital Librarianship*, *8*(1), 25–37. https://doi.org/10.1080/15323260801927342.

Goldberg, T. (2011). Joplin Public Library Is Safe amid Post-Tornado Chaos [UPDATED]. Retrieved April 20, 2019, from https://americanlibrariesmagazine.org/blogs/the-scoop/joplin-public-library-is-safe-amid-post-tornado-chaos-updated/.

Gordon, J. E. (2003). *Structures: Or Why Things Don't Fall Down* (1 edition). New York: Da Capo Press.

Grace, D., & Sen, B. (2013). Community Resilience and the Role of the Public Library. *Library Trends*, *61*(3), 513–541. https://doi.org/10.1353/lib.2013.0008.

Green, S., & Teper, T. (2007). The Importance of Disaster Planning for the Small Public Library. *Public Library Quarterly*, *25*(3-4), 47-59.

Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In *Handbook of qualitative research* (pp. 105–117). Thousand Oaks, CA, US: Sage Publications, Inc.

Gubrium, J., Holstein, J., Marvasti, A., & McKinney, K. (2012). *The SAGE Handbook of Interview Research: The Complexity of the Craft*. Thousand Oaks, CA: Sage Publications, Inc. Retrieved from http://srmo.sagepub.com/view/handbook-of-interview-research-2e/SAGE.xml.

Heppner, W., H Kernis, M., E Lakey, C., Campbell, W. K., Goldman, B., J Davis, P., & V Cascio, E. (2008). Mindfulness as a means of reducing aggressive behavior: Dispositional and situational evidence. *Aggressive Behavior*, *34*, 486–496. https://doi.org/10.1002/ab.20258.

Hobfoll, S. E., Palmieri, P. A., Johnson, R. J., Canetti-Nisim, D., Hall, B. J., & Galea, S. (2009). Trajectories of Resilience, Resistance, and Distress During Ongoing Terrorism: The Case of Jews and Arabs in Israel. *Journal of Consulting and Clinical Psychology*, *77*(1), 138. https://doi.org/10.1037/a0014360.

Holling, C. S. (1973). Resilience and Stability of Ecological Systems. *Annual Review of Ecology and Systematics*, *4*(1), 1–23. https://doi.org/10.1146/annurev.es.04.110173.000245.

Homeland Security. (2006, August 17). Homeland Security Act of 2002. Retrieved April 20, 2019, from https://www.dhs.gov/homeland-security-act-2002.

Horrigan, J. (2016). *Information Overload*. Pew Research Center.

Hsieh, H.-F., & Shannon, S. E. (2005). Three Approaches to Qualitative Content Analysis. *Qualitative Health Research*, *15*(9), 1277-1288. https://doi.org/10.1177/1049732305276687.

IFRC. (2016). World Disasters Report 2016. Retrieved April 20, 2019, from https://media.ifrc.org/ifrc/publications/world-disasters-report-2016.

Innes, Judith E., & Booher, D. E. (2010). *Planning with Complexity: An Introduction to Collaborative Rationality for Public Policy* (1 edition). Milton Park, Abingdon, Oxon ; New York, NY: Routledge.

Innes, Judith Eleanor. (2010). *Planning with complexity: an introduction to collaborative rationality for public policy*. Milton Park, Abingdon, Oxon ; New York, NY: Routledge. Retrieved from http://public.eblib.com/choice/publicfullrecord.aspx?p=481030.

Jaeger, P., Langa, L., McClure, C., & Bertot, J. (2006). The 2004 and 2005 Gulf Coast Hurricanes: Evolving Roles and Lessons Learned for Public Libraries in Disaster Preparedness and Community Services: Public Library Quarterly: Vol 25, No 3-4. Retrieved April 20, 2019, from https://www.tandfonline.com/doi/abs/10.1300/J118v25n03_17?casa_token=jFDSOiVih8wAAAAA:RED4po4D0jl9FZnrYV2Hs8pO8ljsbh99_dsdeTJL5xMIOMxzabp2UoGvg7VZHap5StzJ3ojvXxB3Xg.

Jaeger, P. T., Bertot, J. C., McClure, C. R., & Rodriguez, M. (2007). Public Libraries and Internet Access across the United States: A Comparison by State 2004–2006. *Information Technology and Libraries*, *26*(2), 4–14. https://doi.org/10.6017/ital.v26i2.3277.

Klein, R. J. T., Nicholls, R. J., & Thomalla, F. (2003). Resilience to natural hazards: How useful is this concept? *Global Environmental Change Part B: Environmental Hazards*, *5*(1), 35–45. https://doi.org/10.1016/j.hazards.2004.02.001.

Koustova, H. (2010). Disaster Information Management Research Center (DIMRC): A Gateway to Disaster Information Resources. *Journal of Electronic Resources in Medical Libraries*, *7*(4), 326–335. https://doi.org/10.1080/15424065.2010.527251.

Kramer, S. (2012). Greenburgh Residents Seek Refuge From Sandy At Library. Retrieved April 20, 2019, from https://dailyvoice.com/new-york/greenburgh/news/greenburgh-residents-seek-refuge-from-sandy-at-library/544044/.

Krippendorff, K. (2013). *Content Analysis: An Introduction to Its Methodology*. SAGE.

Kvale, S. (1996). *InterViews: An Introduction to Qualitative Research Interviewing* (1st edition). Thousand Oaks, Calif: SAGE Publications, Inc.

Lerner, F. (2001). *Story of Libraries: From the Invention of Writing to the Computer Age* (2 edition). New York: Bloomsbury Academic.

Longstaff, P., Armstrong, N., Perrin, K., Parker, W., & Hidek, M. (2010). Building Resilient Communities: A Preliminary Framework for Assessment. Retrieved April 20, 2019, from https://www.hsaj.org/articles/81.

Love, C. B., Arnesen, S. J., & Phillips, S. J. (2015). Ebola Outbreak Response: The Role of Information Resources and the National Library of Medicine. *Disaster Medicine and Public Health Preparedness*, *9*(1), 82–85. https://doi.org/10.1017/dmp.2014.108.

M. Goodman, R., A. Speers, M., Mcleroy, K., Fawcett, S., Kegler, M., Parker, E.,Wallerstein, N. (1998). *Identifying and Defining the Dimensions of Community Capacity to Provide a Basis for Measurement* (Vol. 25). https://doi.org/10.1177/109019819802500303.

Mandel, L. H., Bishop, B. W., McClure, C. R., Bertot, J. C., & Jaeger, P. T. (2010). Broadband for public libraries: Importance, issues, and research needs. *Government Information Quarterly*, *27*(3), 280–291. https://doi.org/10.1016/j.giq.2010.02.004.

Marshall, C., & Rossman, G. B. (1995). *Designing Qualitative Research* (5th edition). Los Angeles: Sage Publications, Inc.

Maxwell, J. A. (2005). *Qualitative Research Design: An Interactive Approach* (2nd edition). Thousand Oaks, CA: Sage Publications, Inc.

Messenger-Gazette, T. (2012). Hurricane Sandy: Somerset County libraries open as warming, recharging and information spots. Retrieved April 20, 2019, from https://www.nj.com/messenger-gazette/2012/11/hurricane_sandy_somerset_county_libraries_open_as_warming_recharging_and_information_spots.html.

Miller, R. (2011). Bringing 21 libraries back to the Gulf Coast: tales of resilience, lessons learned. *Library Journal*, *Aug 16*.

Morris, G. (2012). Public libraries can (literally) serve as a shelter from the storm. Retrieved April 20, 2019, from http://theconversation.com/public-libraries-can-literally-serve-as-a-shelter-from-the-storm-83070.

NLM. (2016). National Library of Medicine's Disaster Lit Database Observes a Milestone [Announcements, News]. Retrieved April 20, 2019, from https://www.nlm.nih.gov/news/disasterlitdatabase.html.

Norris, F. H., & Stevens, S. P. (2007). Community Resilience and the Principles of Mass Trauma Intervention. *Psychiatry: Interpersonal and Biological Processes*, *70*(4), 320–328. https://doi.org/10.1521/psyc.2007.70.4.320.

Norris, F. H., Stevens, S. P., Pfefferbaum, B., Wyche, K. F., & Pfefferbaum, R. L. (2008). Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology*, *41*(1–2), 127–150. https://doi.org/10.1007/s10464-007-9156-6.

NTIA. (2012). Public Library Funding & Technology Access Study 2011-2012 [Text]. Retrieved April 20, 2019, from http://www.ala.org/tools/research/plftas/2011_2012.

NYPL. (2001). 9/11/01. Retrieved April 20, 2019, from https://www.nypl.org/blog/2011/09/11/91101.

Obama, B. (2011). Presidential Proclamation--National Preparedness Month. Retrieved April 20, 2019, from https://obamawhitehouse.archives.gov/the-press-office/2011/08/31/presidential-proclamation-national-preparedness-month.

Oder, N. (2008). When a fire hit, a rural OC library was there to help. *Library Journal*, *May 30*. Retrieved from http://lj.libraryjournal.com/2008/05/ljarchives/when-a-fire-hit-a-rural-oc-library-was-there-to-help/.

Oldenburg, R. (2001). *Celebrating the Third Place: Inspiring Stories About the Great Good Places at the Heart of Our Communities*. Hachette Books.

Orel, G. (2012). Montclair Public Library was a "clean, well-lighted place" during the storm. *Montclair Times*.

Patin, B. (2015). Through Hell and High Water: A Librarian's Autoethnography of Community Resilience after Hurricane Katrina. *MediaTropes*, *5*(2), 58–83. Retrieved from https://mediatropes.com/index.php/Mediatropes/article/view/26419.

Paton, D., & Johnston, D. M. (2006). *Disaster Resilience: An Integrated Approach*. Charles C Thomas Publisher.

Patton, M. (2002). Qualitative Research & Evaluation Methods. Retrieved April 20, 2019, from https://us.sagepub.com/en-us/nam/qualitative-research-evaluation-methods/book232962.

Peet, L. (2018). Dallas Public Library. Retrieved April 20, 2019, from http://www.libraryjournal.com/?detailStory=dallas-public-library-dedicated-to-serving-with-compassion-after-shooting.

Perry, R. W. (2007). What Is a Disaster? In H. Rodríguez, E. L. Quarantelli, & R. R. Dynes (Eds.), *Handbook of Disaster Research* (pp. 1–15). New York, NY: Springer New York. https://doi.org/10.1007/978-0-387-32353-4_1.

Phillips, B. D. (2014). *Qualitative Disaster Research*. Oxford University Press.

Prentice, A. E. (2011). *Public Libraries in the 21st Century* (1 edition). Santa Barbara, Calif: Libraries Unlimited.

Prince, S. H. (2011). *Catastrophe and Social ChangeBased Upon a Sociological Study of the Halifax Disaster*. Retrieved from http://www.gutenberg.org/ebooks/37580.

Public Library Association. (2015). State of America's Libraries Report 2015 [Text]. Retrieved April 20, 2019, from http://www.ala.org/news/state-americas-libraries-report-2015.

Pundask, K. (2017). Other Duties as Assigned – Public Librarians in the Heart of the Opioid Epidemic » Public Libraries Online. Retrieved April 20, 2019, from http://publiclibrariesonline.org/2017/09/other-duties-as-assigned-public-librarians-in-the-heart-of-the-opioid-epidemic/.

QPLSM. (2012). The Library as Lifeline: Getting Past Superstorm Sandy. Retrieved April 20, 2019, from https://americanlibrariesmagazine.org/2012/12/28/the-library-as-lifeline-getting-past-superstorm-sandy/.

Quarantelli, E. (2006). Catastrophes are Different from Disasters: Some Implications for Crisis Planning and Managing Drawn from Katrina. Retrieved April 20, 2019, from http://understandingkatrina.ssrc.org/Quarantelli/.

Quarantelli, E. L. (2005). *What is a Disaster?: A Dozen Perspectives on the Question*. Routledge.

Ramos, J. (2016). Wildfire Crisis in Washington State Highlights the Need for Emergency Communications with Immigrant and Refugee Communities | Dragonfly. Retrieved April 20, 2019, from https://news.nnlm.gov/pnr/wildfire-crisis-in-washington-state-highlights-the-need-for-emergency-communications-with-immigrant-and-refugee-communities/.

Reeves, S., Kuper, A., & Hodges, B. D. (2008). Qualitative research methodologies: ethnography. *BMJ*, *337*, a1020. https://doi.org/10.1136/bmj.a1020.

Reser, J. P., & Swim, J. K. (2011). Adapting to and coping with the threat and impacts of climate change. *The American Psychologist*, *66*(4), 277–289. https://doi.org/10.1037/a0023412.

Robinson, L. W. (2009). *Participatory development and the capacity of Gabra pastoralist communities to influence resilience*(Ph.D.). University of Manitoba (Canada), Canada. Retrieved from http://search.proquest.com.offcampus.lib.washington.edu/docview/741004896/abstract/99A842A46FC44613PQ/1.

Scholl, H., & Patin, B. (2014). Resilient information infrastructures: Criticality and role in responding to catastrophic incidents. *Transforming Government: People*, *8*. https://doi.org/10.1108/TG-12-2012-0015.

Schram, T. H. (2003). *Conceptualizing Qualitative Inquiry: Mindwork for Fieldwork in Education and the Social Sciences*. Merrill/Prentice Hall.

Schumpeter, J., & Backhaus, U. (2006). The Theory of Economic Development (pp. 61–116). https://doi.org/10.1007/0-306-48082-4_3.

Sherrieb, K., Norris, F. H., & Galea, S. (2010). Measuring capacities for community resilience. *Social Indicators Research*, *99*(2), 227–247. https://doi.org/10.1007/s11205-010-9576-9.

Silverman, D. (2013). *Doing Qualitative Research: A Practical Handbook*(Fourth edition). London ; Thousand Oaks, California ; New Delhi ; Singapore: SAGE Publications Ltd.

Skinner, R. (2006). "Nor Any Drop to Drink": New Orleans Libraries in the Aftermath of Hurricane Katrina. *Public Library Quarterly*, *25*(3–4), 179–187. https://doi.org/10.1300/J118v25n03_15.

Sklarew, J. F. (2015). *Shock to the system: How catastrophic events and institutional relationships impact Japanese energy policymaking, resilience, and innovation* (Ph.D.). George Mason University, United States -- Virginia. Retrieved from http://search.proquest.com.offcampus.lib.washington.edu/docview/1726857234/abstract/C6541BFCFBE14AD1PQ/1

Solnit, R. (2009). *A paradise built in hell: the extraordinary communities that arise in disasters*. New York: Viking.

Spear, L. (2012). Kids book it to the Westwood Library after Hurricane Sandy. *Northjersey.Com*.

Stallings, R. A. (2003). *Methods of Disaster Research*. Philadelphia: Xlibris.

Tierney, K., & Bruneau, M. (2007). Conceptualizing and measuring resilience: A key to disaster loss reduction. *TR News*, *250*, 14–17.

Disaster Information Management Research Center | NLM. (2016). Retrieved April 20, 2019, from https://disasterinfo.nlm.nih.gov/.

Robert T. Stafford Disaster Relief and Emergency Assistance Act Fact Sheet | State Public Health | ASTHO. (2011). Retrieved April 20, 2019, from http://www.astho.org/Programs/Preparedness/Public-Health-Emergency-Law/Emergency-Authority-and-Immunity-Toolkit/Robert-T--Stafford-Disaster-Relief-and-Emergency-Assistance-Act-Fact-Sheet/.

Tierney, K., Tierney, K., Bruneau, M., & Bruneau, M. (2007). Conceptualizing and measuring resilience: A key to disaster loss reduction. *TR News*, (250), 14–17.

Tyler, S., & Moench, M. (2012). A framework for urban climate resilience. *Climate and Development*, *4*(4), 311–326. https://doi.org/10.1080/17565529.2012.745389.

Veil, S., & Bishop, B. (2012). *Community Resilience and Public Libraries: Post Crisis Information and Connectivity*. University of Colorado Natural Hazards Center.

Veil, S. R., & Bishop, B. W. (2014). Opportunities and Challenges for Public Libraries to Enhance Community Resilience. *Risk Analysis*, *34*(4), 721–734. https://doi.org/10.1111/risa.12130.

Walsh, F. (2016). Family resilience: a developmental systems framework. *European Journal of Developmental Psychology*, 1–12. https://doi.org/10.1080/17405629.2016.1154035.

Weiss, L. (2012). CO library serves kids "on the fly" as wildfires rage. *School Library Journal*, *June 19*. Retrieved from http://www.slj.com/2012/06/public-libraries/co-library-serves-kids-on-the-fly-as-wildfires-rage.

White House. (2010). Presidential Proclamation--National Preparedness Month, 2010. Retrieved April 20, 2019, from https://obamawhitehouse.archives.gov/the-press-office/2010/08/27/presidential-proclamation-national-preparedness-month-2010.

Will, B. H. (2001). The Public Library as Community Crisis Center. *Library Journal*, *126*(20), 75–77.

Yee, V. (2012). After Storm Destruction, Rockaway Libraries Help Keep Community Afloat - The New York Times. Retrieved April 20, 2019, from https://www.nytimes.com/2012/11/26/nyregion/after-storm-destruction-rockaway-libraries-help-keep-community-afloat.html?hpw&_r=2&.

Zach, L. (2011). What Do I Do in an Emergency? The Role of Public Libraries in Providing Information during Times of Crisis. *Science & Technology Libraries, 30*(4), 404-413.

Zach, L., & McKnight, M. (2010). Special Services in Special Times: Responding to Changed Information Needs During and After Community-Based Disasters » Public Libraries Online. Retrieved April 20, 2019, from http://publiclibrariesonline.org/2013/05/special-services-in-special-times-responding-to-changed-information-needs-during-and-after-community-based-disasters.

Zavalick, C. (2012). Bernardsville Library serves as multi-purpose center. Retrieved April 20, 2019, from https://www.newjerseyhills.com/bernardsville_news/news/bernardsville-library-serves-as-multi-purpose-center/article_a8faeaf8-29b6-11e2-bc59-001a4bcf887a.html.

APPENDIX A: CODING SCHEME

Code Family	Codes	Theoretical Explanation	Discussion from Pilot
Information & Communication: creation of common meanings and understandings and the provision of opportunities to articulate needs, views, and attitudes	Narratives_sharing Narrative_using	Gives the experience shared meaning and purpose; members shared understanding of reality	There is a need to split the narrative codes to indicate people "telling stories" which will be codes as Sharing Narratives and researchers using narratives which will be coded as Using Narratives .
	Responsible Media	Metaphors and myths: exaggerated and extreme portrayals of looting and lawlessness	
	Skills	Education levels of citizens; ability to use ICTs	I will continue to use one code to capture any references to skills of Skilled of librarians and citizens so we can see if a difference in skills emerges from the literature.

	Infrastructure Infrastructure_need	Systems in place for response; actual presence of machines, wires, internet, wifi, etc., also power	We found a need to split the infrastructure code into the actual physical equipment which will be coded as infrastructure and the need for infrastructure which will be coded as Infrastructure need
	Trusted Sources of Info	Closer sources of info are more likely to be trusted; whether the sender of the info is trustworthy (important b/c there is often little time to double-check)	
	Info Needs	Need for accurate info about the danger and behavioral options, and quickly	
Community Competence: networked equivalent of human agency marked by collective action and decision-making	Community Action	Act in a way as to recover from what they define as negative physical or social events/ coping strategies/ planning for the future	There are several places that mention the knowledge that comes from experience, which is sometimes discussed in our field as Tacit knowledge. We will capture this idea as part

			of community action.
	Critical reflection & problem solving skills	Collaboration to identify problems and needs of community and ability to come to consensus on goals and priorities	
	Flexibility and creativity	Ability to adapt and change goals and objectives in light of new info and learning; thinking outside the box	
	Collective efficacy & empowerment	Trust and shared willingness to work for the common good of a neighborhood/ and the individuals belief that they can and should participate	
	Political partnerships	The type of political approach to civic involvement: proactive or reactive	
Social Capital: individuals invest, access, and use resources embedded in social networks to gain returns	Received (enacted) social support	Consider source of help: from whom and type of help: emotional, informational, and tangible	
	Perceived (expected) social support	Mentions of sources and types of help folks expected to get	
	Social embeddedness (informal ties)	Strength of one's social network, who they know, how many people they chat with	
	Organizational linkages & cooperation	Organizations working together, agreements in place to work together in the future, type of link: loose, tight	
	Citizen participation leadership & roles (formal ties)	Voter participation, membership in religious congregations, school and resident associations,	

		neighborhood watches, self-help groups; who is participating and why and how	
	Sense of community	Attitude of bonding (trust and belonging) associated with high concern for community issues, respect for and service to others, sense of connection	
	Attachment to place	Implies connection to one's neighborhood or city, apart from their connections with people	
Economic Development	Fairness of risk & vulnerability to hazards	"it costs more to be poor" people in poorer communities assume more risk because of lesser infrastructures as well as typically having less of a network and social support	
	Level and diversity of economic resources	Economic growth, stability of livelihoods, and equitable distribution of incomes and assets, land and raw materials, physical capital, accessible housing, health services, schools, and employment opportunities	
	Equity of resource distribution	Income or resource equity	
Types of Libraries	Academic	Libraries directly serving universities, colleges, or community colleges	
	School	Libraries serving k-12 students associated with public or private education institutes	
	Public	Libraries that serve cities, counties, or	
	Special	Libraries associated with other organizations, business, and governments. For example: medical	

		libraries, state libraries, law firm libraries.	
	Tribal	Libraries on reservations or that are directly connected with a federally recognized tribe	
Types of Disaster	Disaster Type	Highlights the specific form of disruption	
Types of EM Organization	FEMA Red Cross Other	Organization whose roles are specifically to undertake emergency management roles in the community	
Dynamic Attributes of Resources	Robustness	Resource strength in combination with a low probability of deterioration	
	Redundancy	The extent to which elements are sustainable in the event of disruption or degradation	
	Rapidity	How quickly the resources can be accessed and used (mobilized)	
	35 codes		

APPENDIX B: CONTENT ANALYSIS ITEMS

3	Blinder A. What to do with the tributes after the shooting stops. New York Times [Internet]. 2017 July 7. Available	1
5	Corbray K. At the library: looking to the library in times of crisis. Yakima Herald-Republic. 2017 Dec 6. Available from: http://www.yakimaherald.com/scene/literature/at-the-library-looking-to-the-library-in-times-of/article_e4ca11b6-dace-11e7-be03-97e5849d3c02.html	2
6	De Brún C. Knowledge & library services (KLS) evidence briefing: What is the evidence around knowledge and library service provision and knowledge management to support global health, and disaster and emergency preparedness? [Internet]. 2017 June 2. Available from: http://www.hifa.org/sites/default/files/publications_pdf/Evidence_briefing_global_health_library_services_EAHIL_June_2017_FINAL_VERSION.pdf	3
7	Ford, A. Saving lives in the stacks: how libraries are handling the opioid crisis. American Libraries. [Internet]. 21 June 2017. Available from: https://americanlibrariesmagazine.org/2017/06/21/saving-lives-in-the-stacks/	4
9	Heckel J. University of Illinois librarian to help Puerto Rican libraries with disaster recovery. University of Illinois News Bureau; 21 Dec 2017. Available from: https://news.illinois.edu/view/6367/592003	5
13	Morris G. Public libraries can (literally) serve as a shelter from the storm. The Conversation [Internet]. 30 Aug 2017. Available from: https://theconversation.com/public-libraries-can-literally-serve-as-a-shelter-from-the-storm-83070	6
15	Peet L. Mainland libraries aid Maria victims with money, mapathons. Library Journal [Internet]. 2017 Oct 18. Available from: http://lj.libraryjournal.com/2017/10/academic-libraries/mainland-libraries-aid-maria-victims-money-mapathons/	7
17	Pundsack K. Other Duties as Assigned—Public Librarians in the Heart of the Opioid Epidemic. Public Libraries Online [Internet]. 11 Sept 2017. Available from: http://publiclibrariesonline.org/2017/09/other-duties-as-assigned-public-librarians-in-the-heart-of-the-opioid-epidemic/	8
23	Garcia-Febo L, Leong JH, Relander J, Richards J. Library Services to Immigrants and Refugees [Webinar recordings]. International Federation of Library Associations and Institutions (IFLA); 2016 Mar 31. Available from: https://ala.adobeconnect.com/_a1087453682/p14twyow7qp/ [introduction] and https://ala.adobeconnect.com/_a1087453682/p9qzpfzn7ad/ [presentations].	9
26	International Federation of Library Associations and Institutions (IFLA), Public Libraries Section. Responding! Public Libraries and Refugees [Internet]. 2016 Mar 31. Available from: http://www.ifla.org/files/assets/public-libraries/publications/library_service_to_refugees_0.pdf	10
30	Peet, L. Dallas Public Library "dedicated to serving with compassion" after shooting. Library Journal [Internet]. 2016 July 8; [about 1 page]. Available from: http://lj.libraryjournal.com/2016/07/public-services/dallas-public-library-dedicated-to-serving-with-compassion-after-shooting	11

31	Ramos J. Wildfire crisis in Washington State highlights the need for emergency communications with immigrant and refugee communities. Dragonfly. Newsletter for the NN/LM Pacific Northwest Region. 2016 Feb 8. Available from:http://nnlm.gov/pnr/dragonfly/2016/02/08/wildfire-crisis-in-washington-state-highlights-the-need-for-emergency-communications-with-immigrant-and-refugee-communities/	12
32	Bardyn T. Creating the response and recovery app in Washington: a statewide disaster information partnership. As part of Enhancing library impact through technology. Journal of the Medical Library Association. 2015 Oct;103(4):222-231. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4613389/	13
33	Barger R. Creating a readiness culture within Pennsylvania libraries. The MAR Report: Quarterly Newsletter of the National Network of Libraries of Medicine, Middle Atlantic Region (MAR). [Internet]. 2015 Winter. Available from: http://nnlm.gov/mar/newsletter/2015/02/creating-a-readiness-culture-within-pennsylvania-libraries/	14
34	Berry III JN. 2015 Gale/LJ Library of the year: Ferguson Municipal Public Library, MO, Courage in crisis. Library Journal [Internet]. 2015 Jun 8. Available from: http://lj.libraryjournal.com/2015/06/awards/2015-galelj-library-of-the-year-ferguson-municipal-public-library-mo-courage-in-crisis	15
36	Dankowski T. Business continuity over collections recovery: How Louisiana's state library changed the way it plans for disasters. American Libraries. 2015 Aug 25. Available from: http://americanlibrariesmagazine.org/blogs/the-scoop/business-continuity-over-collections-recovery/	16
38	Hagar C. Editorial. Strengthening community resilience efforts in disasters: exploring the roles of public libraries. Journal of Emergency Management. 2015 May/June;13(3):191-194.	17
64	Bauman M, Bishop R. Our libraries were ports in the storm. In Superstorm Sandy recovery: one year later. New Jersey Municipalities. 2013 Oct: 16-17. Available from: http://lss.njstatelib.org/lss_files/League_of_Municipalities_article.pdf (PDF, 5.7 MB)	18
71	Bishop B, Veil S. Public libraries as post-crisis information hubs. Public Library Quarterly [Internet]. 2013 Jan;32(1):33-45. Available from: http://dx.doi.org/10.1080/01616846.2013.760390	19
72	Bishop BW, McClure CR, Mandel LH. E-government service roles for public libraries. Public Libraries, 2011; 50(3):32–37. Available from: http://mcclure.ii.fsu.edu/publications/2011/Bishop_McClure_Mandel_FINAL_Sept13_11.pdf	20
77	Brobst JL, Mandel LH, McClure CR. Public libraries and crisis: roles of public libraries in hurricane/disaster preparedness and response. Crisis Information Management: Communication and Technologies. 2012;155-173.	21
82	Chant I. After floods, Colorado libraries assess the damage, step in with services. Library Journal [Internet]. 2013 Oct 8. Available from: http://lj.libraryjournal.com/2013/10/public-services/after-floods-colorado-libraries-assess-the-damage-step-in-with-services/	22
96	Eberhart G. Reports still coming in on library flooding from Hurricane Sandy. American Libraries. [Internet]. 2012 Oct 31. Available	23

	from: http://americanlibrariesmagazine.org/news/10312012/reports- still-coming-library-flooding-hurricane-sandy	
109	Featherstone RM. Disaster information specialist: an emerging role for health librarians. Journal of Library Administration. 2012;52(8):731-753. Available from http://dx.doi.org/10.1080/01930826.2012.746875	24
112	Federal Emergency Management Agency (FEMA). Preserving and protecting a community treasure–the Historic Rosenberg Library in Galveston, Texas. Mitigation Best Practices [Internet]. Available from: http://www.fema.gov/media-library-data/1458053604256-afc597d90c3319ac9ead16582e3eee8c/15-Preserving_Protecting_Rosenberg_Library_web1.pdf	25
116	Fletcher AM. No point of reference: a hurricane of medical information needs. Journal of Hospital Librarianship. 2006;6(2):1-14. Available from: http://dx.doi.org/10.1300/J186v06n02_01	26
121	Gilbert C. Code yellow: library 9-1-1. Journal of Hospital Librarianship. 2008 Mar; 8(1):25–37. Available from: http://dx.doi.org/10.1080/15323260801927342	27
122	Golberg B. Joplin public library is safe amid post-tornado chaos [updated]. American Libraries [Internet]. 2011 May 24;[about 3 pages]. Available from: http://www.americanlibrariesmagazine.org/blog/joplin-public- library-safe-amid-post-tornado-chaos-updated	28
123	Golberg B. Massachusetts mayor: library service is essential after tornado. American Libraries [Internet]. 2011 Jun 08;[about 1 page]. Available from: http://www.americanlibrariesmagazine.org/article/massachusetts-mayor-library-service-essential-after-tornado	29
126	Griffen AM. Potential roles of the public library in the local emergency management program: a simulation. Special Libraries. 1987;78(2):122-130.	30
130	Hamilton R. The state library of Louisiana and public libraries' response to hurricanes: issues, strategies, and lessons. Public Library Quarterly. 2011 Jan-Mar;30(1):40-53. Available from: http://dx.doi.org/10.1080/01616846.2010.525385	31
133	Heezen R. Building for the future: an examination of best practices and accomplishments from Louisiana libraries. Louisiana Libraries. 2011 Summer;74(1):10-13.	31
139	Hurricane Sandy: Somerset County libraries open as warming, recharging and information spots. The Messenger Gazette. [Internet]. 2012 Nov 5. Available from: http://www.nj.com/messenger-gazette/index.ssf/2012/11/hurricane_sandy_somerset_county_libraries_open_as_warming_recharging_and_information_spots.html	33
146	Kelley M. ALA Midwinter 2011: Cedar Rapids new public library helped spur FEMA change. Library Journal [Internet]. 2011 Jan 19.	34
147	Kelley M. ALA midwinter 2011: FEMA recognizes libraries as essential community organizations. Library Journal [Internet]. 2011 Jan 11;[about 1 page].	35

156	Kramer S. Greenburgh Residents seek refuge from Sandy at library. Daily Voice [Internet]. 2012 Oct 30. Available from: http://greenburgh.dailyvoice.com/news/greenburgh-residents-seek-refuge-sandy-library&lang=en	36
158	Langford M., Weeks R., Lawson DR. (2013). Chapter 11: In the wake of Hurricane Ike: The Houston Public Library responds. Public Libraries and Resilient Cities (pp. 127-136). Chicago: American Library Association.	37
163	Long SA. Recovery and renewal: libraries lead the way in post-Katrina New Orleans. New Library World. 2006;107(11-12):552-554.	38
164	Love CB, Arnesen SJ, Phillips SJ, Windom R. National Library of Medicine Disaster Information Management Research Center: achieving the vision, 2010–2013. Information Services & Use. 2014 Sept 16;34(1-2):149-170. Available from: http://dx.doi.org/10.3233/ISU-140731	39
170	Massachusetts Board of Library Commissioners. Libraries to serve as disaster recovery centers. [Internet]. 2008 Nov 07;[about 2 pages.]. Available from: http://mblc.state.ma.us/mblc/news/releases/past-releases/2008/nr081107.php	40
189	Muller K. Community disaster response. karenmuller's blog. American Library Association. [Internet]. Available from: http://www.ala.org/tools/community-disaster-response	41
193	New York Public Library. The New York Public Library responds to public's need in the wake of the September 11 tragedy with a new series of programs. [Internet]. 2001 Oct 2;[about 1 page].	42
197	Oder N. When a fire hit, a rural OC library was there to help. Library Journal [Internet]. 2008 May 30;[about 2 pages]. Available from: http://lj.libraryjournal.com/2008/05/ljarchives/when-a-fire-hit-a-rural-oc-library-was-there-to-help/	43
198	Orel G. Montclair Public Library was a 'clean, well-lighted place' during the storm. Montclair Times. [Internet]. 2012 Nov 20. Available from: http://www.northjersey.com/news/180238311_The_Montclair_Public_Library_was_a__clean__well-lighted_place__during_the_storm.html?c=y&page=1	44
205	Queens Library staff members. The library as lifeline: getting past Superstorm Sandy. American Libraries [Internet]. 2012 Dec 28. Available from: http://americanlibrariesmagazine.org/features/12282012/library-lifeline-getting-past-superstorm-sandy	45
206	Rasmussen C. Hurricane-stressed teachers get digital help from NSDL and DLESE. UCAR Quarterly [Internet]. 2005 Fall;[about 1 page]. Available from: http://www.ucar.edu/communications/quarterly/fall05/teachers.html	46
208	Register Staff. Greater New Haven libraries completely booked with residents looking for internet, electricity. New Haven Register [Internet]. 2012 Oct 31. Available from: http://www.nhregister.com/articles/2012/10/31/news/doc5091cd2e8282d049348096.txt?viewmode=fullstory	47
213	Rohr A. Forging a resilient revitalization for New Orleans Public Library. American Libriaries. 2011 May/Jun;42(5/6):22.	48

224	Spear L. Kids book it to the Westwood Library after Hurricane Sandy. NorthJersey.com. [Internet]. 2012 Nov 2. Available from: http://www.northjersey.com/news/176999661_Kids_book_it_to_the_Westwood_Library_after_Hurricane_Sandy.html?page=all	49
229	Studwick J. A selected bibliography of library disaster stories: before, during, and after. Public Library Quarterly. 2006;25(3-4);7-16. doi:10.1300/j118v25n03_02.	50
235	Veil S, Bishop B. Opportunities and challenges for public libraries to enhance community resilience. Risk Analysis. 2013 Oct;34(4):721-732. Available from: http://onlinelibrary.wiley.com/doi/10.1111/risa.12130/full	51
237	Ways patrons used the library after Hurricane Gustav. East Baton Rouge Parish Library InfoBlog. 2008 Sept 18. Available from: http://blog.ebrpl.com/2008/09/18/ways-patrons-used-the-library-after-hurricane-gustav/	52
238	Weiss L. CO library serves kids "on the fly" as wildfires rage. School Library Journal. [Internet]. 2012 Jun 19;[about 2 pages]. Available from http://www.slj.com/2012/06/public-libraries/co-library-serves-kids-on-the-fly-as-wildfires-rage	53
239	Welsh TS, Higgins SE. Public libraries post-Hurricane Katrina: a pilot study. Library Review. 2009;58(9):652-659. Available from: http://dx.doi.org/10.1108/00242530910997937	54
240	Will BH. The public library as community crisis center. Library Journal. [Internet]. 2001 Dec 15;[about 6 pages]. Available from http://www.libraryjournal.com/article/CA185136.html	55
242	Wilson DT, Yowell SS. Become agents of community resilience. Information Outook. 2013 Jul-Aug;17(4):16-17,22.	56
243	Wilson V. Public libraries can play an important role in the aftermath of a natural disaster. Evidence Based Library & Information Practice. 2010;5(3):59-61. Available from: http://ejournals.library.ualberta.ca/index.php/EBLIP/article/view/8288	57
245	Yee V. Despite ruin, library offers books and community. New York Times [Internet]. 2012 Nov 26. Available from: http://www.nytimes.com/2012/11/26/nyregion/after-storm-destruction-rockaway-libraries-help-keep-community-afloat.html?hpw&_r=2&	58
248	Zach L, McKnight M. Special services in special times: responding to changed information needs during and after community-based disasters. Public Libraries. 2010 Mar/Apr;49(2):39-45.	59
250	Zavalick C. Bernardsville Library serves as multi-purpose center. Bernardsville News [Internet]. 2012 Nov 9. Available from: http://newjerseyhills.com/bernardsville_news/news/bernardsville-library-serves-as-multi-purpose-center/article_a8faeaf8-29b6-11e2-bc59-001a4bcf887a.html	60
255	Garcia-Febo L. Rebuilding Puerto Rican Libraries: ALA president-elect joins aid effort with local libraries and library workers. American Libraries [Internet]. 1 Feb 2018. Available	61
260	Stricker M. From Facilities to Trauma: Disaster Planning and Community Resiliency at Your Library. WebJunction [Internet]. 30 Jan 2018. Webinar recording, slides, chat, captions, and learner guide available from	62

	https://www.webjunction.org/events/webjunction/disaster-planning-community-resiliency.html	
271	Bookwalter G. In frigid weather, Evanston library social worker helps assist homeless population. Evanston Review [Internet]. 2017 Dec 28. Available from http://www.chicagotribune.com/suburbs/evanston/news/ct-evr-library-social-worker-homeless-tl-1228-20171227-story.html	63

APPENDIX C: PARTICIPANT RECRUITMENT MATERIALS

Rising Together Recruiting Script

Hello, my name is Beth Patin. I am a graduate student at the University of Washington in the Information School. I am conducting research on public libraries and community resilience, and I am inviting you to participate because you have operated a library/ organization during a federally recognized disaster.

Participation in this research includes participating in an interview describing the role your library/organization played during the disaster, which will take approximately 30 minutes to one hour.

If you have any questions or would like to participate in the research, I can be reached at *bethp@uw.edu*.

APPENDIX D: PARTICIPANT CONSENT

Rising Together: Consent to take part in research

I…… voluntarily agree to participate in this research study.

I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.

I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.

I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study.

I understand that participation involves participating in an interview ranging from 30 minutes to one hour discussing my organization's roles after a disaster.

I understand that I will not benefit directly from participating in this research.

I agree to my interview being audio-recorded.
I understand that all information I provide for this study will be treated confidentially.

I understand that in any report on the results of this research my identity will remain anonymous. This will be done by changing my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.

I understand that disguised extracts from my interview may be quoted in a dissertation, conference papers, journal articles, or academic presentations.

I understand that if I inform the researcher that myself or someone else is at risk of harm they may have to report this to the relevant authorities - they will discuss this with me first but may be required to report with or without my permission.

I understand that signed consent forms and original audio recordings will be retained in a password-protected, encrypted server located at the University of Washington until the dissertation and other following articles are completed.

I understand that a transcript of my interview in which all identifying information has been removed will be retained for 2 years.

I understand that under freedom of information legalization I am entitled to access the information I have provided at any time while it is in storage as specified above.

I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

Beth Patin, PhD Candidate, University of Washington Information School, bpatin@uw.edu
Dr. Allyson Carlyle, Emeritus Associate Professor, University of Washington Information School, acarlyle@uw.edu

Signature of research participant
---------- ----------
Signature of participant Date

Signature of researcher
I believe the participant is giving informed consent to participate in this study
---------- ----------
Signature of researcher Date

APPENDIX E: INTERVIEW GUIDE

Rising Together Interview Questions

-Adapted from Veil, S.R., & Bishop, B.W. (2014). Opportunities and challenges for public libraries to enhance community resilience. Risk analysis: an official publication of the Society for Risk Analysis, 34 4, 721-34.

The researcher may as clarifying or follow up questions. All instances of this will be noted by the research in the transcripts.

(1) Describe your experience related to disaster preparation. We are particularly interested in the role of you and your (**library/organization**). (If necessary, prompt the plans, services, and activities in which you and your library/organization were engaged).

(2) Describe your experience related to disaster recovery. We are particularly interested in the role of you and your (**library/organization**) (If necessary, prompt the plans, services, and activities in which you and your library were engaged).

(3) Please summarize your experience into key roles (e.g., plans, services offered to the public, activities).

(4) What resources or training were needed for you to perform those key roles?

(5) Which government and/or private organizations assisted in your key roles?

(6) What are the most vital factors that enabled your (**library/organization/community**) to recover from the disaster?

(7) What role did your library play in enabling the community to recover from the disaster?

(8) What would you want other libraries/organizations to know to prepare for other disasters? (For example, what worked well/what are you most proud of? What did not go well? What would you change?

VITA

Beth Patin is currently a PhD Candidate at the University of Washington's Information School. She is the recipient of both the Washington Doctoral Initiative Fellowship and the Nancy Gershenfeld Fellowship. Beth graduated from Loyola University New Orleans in 1999 with a B.S. in Education. She taught in the New Orleans Public Schools prior to pursuing a master's degree in Library and Information Science at Louisiana State University. Beth's research agenda focuses on the equity of information in two research streams: crisis informatics and building cultural competency. Both research areas are a product of personal experiences and the complicated questions rising from them. After becoming a teacher-librarian, her library was destroyed by Hurricane Katrina inspiring her to think about libraries and the roles they can play in disasters and the many different information problems arising in crisis contexts. In 2007, Beth was an American Library Association Emerging Leader. Currently, she is a member of the Advisory Board on the Laura Bush Foundation for America's Libraries and an Assistant Professor at Syracuse University's School of Information Studies.